

# To Help You Make Your Plans for 1933



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## 590 Pages of Helpful Business Information

### Contents of the New Directory Supplement

#### 1. Trend of Distribution During 1932

Anyone who wants an overall and up-to-the-minute picture of industry developments and merchandising trends during 1932, should not miss the survey which Editor George F. Taubeneck has especially prepared for this Supplement.

This review reflects opinions and information obtained as a result of much traveling and wide contact with distributors and dealers as well as manufacturers all over the country. Written in the frank, engaging style which is characteristic of Mr. Taubeneck's editorials, it presents a comprehensive picture of the industry's progress during the past year.

#### 2. Sales Statistics for 1932

This comprises a month-to-month tabulation of household and commercial refrigerator sales during 1932 as compiled by the Refrigeration Division of the National Electrical Manufacturers

Association. (Companies represented in the NEMA group include Copeland, Frigidaire, General Electric, Kelvinator (including Leonard), Norge, Servel, Trupar, Universal Cooler, Westinghouse, Majestic, Gibson and Crosley.) Also household electric refrigerator sales by the entire industry as estimated by Electric Refrigeration News after a special survey.

#### 3. Specifications of Household Electric Refrigerators

Comprehensively presented covering 56 pages are the specifications of household electric refrigerators manufactured by 48 different companies. In response to a wide demand from distributors, dealers and salesmen, these specifications were first published in the May and June issues of Electric Refrigeration News and all manufacturers were invited to bring specifications up-to-date for the purpose of this Directory Supplement.

#### 4. Air Conditioning Directory

A revised list of the manufacturers of all types of air-conditioning equipment also principal parts and accessories.

### Some of the Directory Contents

#### Complete List of Manufacturers of Refrigeration Equipment, Parts, Materials and Supplies

All companies are listed in four different sections—alphabetical, trade name, classified and geographical. The classified section comprises 196 pages of complete information on all sources of supply for products and services used by the industry. The geographical section is the first complete list of refrigeration manufacturers to be issued in convenient geographical arrangement with names of executive officers.

#### Figures and Analyses of Refrigeration Sales

These figures cover a ten-year period and are broken down according to the major classifications of equipment.

#### Figures on Wired Homes

All states, counties and places of 2,500 population or over are covered with the estimated potential market for electric refrigerators in each community.

#### Sales Charts of Electric Appliances

These charts show the comparison of refrigeration sales with other household appliances and the relative saturation of the market.

#### Distributor and Dealer Survey

Here are presented the results of a merchandising survey based on confidential information concerning distribution methods of 497 distributors and 20,897 dealers.

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# Merchandising Section

IN TWO PARTS  
PART ONE

# ELECTRIC REFRIGERATION NEWS

Registered U. S. Patent Office

The business newspaper of the refrigeration industry

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## G.E. ADOPTS PLAN FOR DEPT. STORE APPLIANCE SALES

### Distributors To Control 'Store Within A Store'

CLEVELAND—A new plan of merchandising a complete line of electrical household appliances through large department stores in metropolitan trading areas, to be known as the "General Electric Controlled Sales Plan," has been devised by Ralph C. Cameron, manager of department store activities for the merchandising division of the General Electric refrigeration department here.

The "Controlled Sales Plan" (under which the appliances are put in stores on consignment—the distributor furnishing salesmen and handling service, and the store doing the financing and advertising) enables the leading department stores in each metropolitan trading area to become an exclusive retail outlet for the complete line of General Electric appliances including the Monitor Top and Junior models of the General Electric refrigerator and the Hot-point range.

This new method of merchandising is being used now in the C. F. Hovey department store in Boston. There, store traffic has increased 90 per cent, and the net profit on electrical appliances has been substantially increased without any additional expense on the part of the store, according to Cameron.

Department stores need hire no addi-

(Concluded on Page 2, Column 3)

## MAJ. BLOOD TALKS ON ECONOMIC OUTLOOK

DETROIT—Major Howard E. Blood, president of Norge Corp., and executive vice president of Borg-Warner Corp., and Charles W. Kettering, vice president of General Motors, were among the 10 Republican business and financial leaders who discussed over the radio last week the economic outlook resulting from the presidential election.

Major Blood, summarizing the thoughts expressed by the assembled group of industrial magnates and financial leaders, said: "This great civic program is symbolic of the way in which good Republicans everywhere have ranked themselves alongside the new President."

"Though Mr. Roosevelt's tenets differ from those of the Republican, there can be no doubt that both major parties see eye to eye on the question of the country's welfare."

"We are here tonight to pledge to Americans of every section of the country a patriotism and loyalty which means that we will exercise every effort to maintain the business improvement which has been slowly but surely continuing for the past few months."

Other speakers on the program were: William Mills, financial advisor to President Hoover; Robert Lord of the Guardian Trust Co.; Wilbur Brucker, governor of Michigan; and Frank Murphy, mayor of Detroit.

## Ring Manages Majestic Contract Department

CHICAGO—Raymond Ring, formerly sales manager of Dry-Zero Corp., has been appointed manager of the new contract department of Grigsby-Grunow Co. The purpose of the new department is to manufacture and sell refrigerator cabinets, as well as various machine unit parts, to other refrigerator manufacturers.

Ring just completed a 10-day private showing at the Congress hotel here.

## LEONARD ORDERS SHOW GAIN IN OCTOBER

DETROIT—Orders for Leonard electric refrigerators received during October, 1932, were 450 per cent of orders received during October, 1931, according to R. I. Petrie, general sales manager of the Leonard Refrigerator Co. of Detroit and Grand Rapids, Mich.

## Judges Select Winners of Frigidaire Contest

### Chicago Tribune Man Wins Cadillac Automobile

DAYTON—Winners of the five automobiles, 10 Frigidaires, and 30 cash prizes offered in the Frigidaire Corp. word building radio contest held during September and October have just been announced by H. W. Newell, vice president in charge of sales.

More than 116,000 entries were recorded in the contest, according to Mr. Newell. These were from every section of the country, and represented every district in which there is a Frigidaire dealer organization.

Judges of the contest were Lowell Thomas, well known radio reporter; Miss Katherine Fisher, director of Good Housekeeping Magazine Institute; and F. M. Cockrell, publisher, ELECTRIC REFRIGERATION NEWS.

Winners of the five major prizes are: E. D. Kruse, Chicago, Cadillac sedan; Mrs. Katie H. Fabio, New Bedford, Mass., Buick sedan; Miss A. V. Strang, Brooklyn, Oldsmobile eight sedan; Nelson B. Wells, East Milton, Mass., Pontiac eight sedan; Miss Helen M. Unglaub, Springfield, Ohio, Chevrolet.

Mr. Kruse was found to be advertising promotion manager of The Chicago Tribune. Miss Strang lives at home and has no business activity, while Miss Unglaub is employed by the Detroit, Toledo and Ironton railroad, a subsidiary of the Pennsylvania railroad. Mr. Wells is office manager for a leather company and is a contributing editorial writer to the Quincy News. Mrs. Fabio is a housewife.

"The contest brought tens of thousands of live prospects into the showrooms of our dealers," states Mr. Newell. "Persons interested in the contest were compelled to get the complete Frigidaire story in the showroom before they could fill out the entry blank."

"An outstanding achievement for

(Concluded on Page 2, Column 4)

## Bickham Named Sales Head of Buckeye

MANSFIELD, Ohio—W. C. A. Bickham, formerly assistant general sales manager of the Fisk Rubber Co., New York City, and for a period of time general sales manager of the Sun Glow Industries, Inc., subsidiary of Domestic Industries, Inc., has been recently appointed general sales manager of Domestic Industries, Inc.

(Concluded on Page 2, Column 3)

## INSIDE DOPE . . . . . By George F. Taubeneck

DON'T LET ANYONE KID YOU about the nadir of cheapness in electric refrigerator construction having been reached.

An engineer in Chicago, for instance, has a unit which he claims can be manufactured for \$10 per each. Not much of an electric refrigerator, to be sure, but it will do the work of an ordinary icebox.

Specifications on this midget model call for 1½ cu. ft. net storage capacity, lacquer interior, Lake Michigan air for insulation, and a unit (powered with a 1/20-hp. motor) which would run continuously. Temperature maintained (except on hottest days) would vary from 50° to 55° F.

TWO MEN WHO HAVE CAUSED more than one manufacturer to curse under his breath—and others to swear loudly right out in meeting—are Bill Grunow and T. Irving Potter.

And according to present dope, both these men are again seeking the limelight.

BILL GRUNOW IS THE MAN WHO (with B. J. Grigsby) upset the radio industry by combining an all-electric receiver and a patent-violating dynamic speaker in a console cabinet to make the first modern radio set, and selling the whole works for less than the then prevailing price on a dynamic speaker.

Later he put a crimp in refrigeration sales by letting the rumor get out that he would shortly offer for sale a line of hundred-dollar electric refrigerators—which he didn't.

Now he has a great many executives perturbed by stories that he will announce an electric refrigerator using

carrene as a refrigerant, and emphasize the safety qualities of that refrigerant.

Their worry is well-founded. Bill has a four-blade rotary compressor using carrene all set for production, and has let the contract for his cabinets—which will be beauties. Distributors are all appointed.

The Grunow refrigerator won't be ready tomorrow, or next week, or next month. But soon. And when it is, look out!

T. IRVING POTTER, THE CAGEY promoter who set the industry on its collective ear last spring by announcing a radically designed electric refrigerator in a 20-page advertisement in ELECTRIC REFRIGERATION NEWS has something new up his sleeve.

As predicted in the "Expansion Va'va'e" last March, Mr. Potter is still in the refrigeration business, despite the incensed prognosticators who said he didn't have enough money to last six weeks.

Suppliers say that several carloads of Tricold refrigerators have been sold in the ensuing months.

For next year there will be more models, plus refinements.

PUFFER-HUBBARD'S VENTILATED cabinets are causing a big uproar in refrigeration engineering circles.

Some say it's the biggest idea of the year. Others claim that the Moore system of ventilation makes the compressor refrigerate the whole kitchen by pumping cold air out the vents.

At least one sizeable manufacturer, however, is negotiating for cabinets employing this system; and the president

## OKLAHOMA CITY DISTRIBUTOR WINS G. E. CAMPAIGN

### Ovalle, Brown, Cooper, Wolf, Cone, Courtright In Cabinet

CLEVELAND—Albert Ahrens, General Electric distributor in Oklahoma City, was elected president of "Refrigeraria" by the largest majority in the history of the "republic," polling 345,099 votes, in the Monitor Top Election Campaign, General Electric sales contest.

Ahrens attained more than 200 per cent of quota during the campaign. Approximately 6,000,000 votes were cast in the election, a score of candidates making from 100 to 200 per cent of quota.

N. K. Ovalle, Harrisburg, Pa., distributor, was elected vice president. In the eighth week of the contest, Ovalle polled 85,000 votes and led Ahrens, who had held first place from the beginning of the campaign, by 33,000 votes. It looked that week as though Ovalle would be president, but in the ninth and final week Ahrens turned in a total of 130,080 votes, nearly his quota for the entire campaign.

Ovalle reported 50,000 votes for the final week but was unable to cope with Ahrens political machine and lost the presidency by 46,000 votes.

M. E. Brown, distributor in Louisville, won the office of secretary of state. Frank W. Wolf, Buffalo distributor,

(Concluded on Page 2, Column 4)

## DISTRIBUTORS MEET

CLEVELAND—To hear detailed plans for a nation-wide Christmas sales campaign as announced by M. F. Mahony, merchandising manager, refrigeration department, and to learn of a new direct mail plan as outlined by Walter J. Daily, sales promotion manager, distributors, retail sales managers, and officials of the General Electric refrigeration department gathered for a regional conference here, Nov. 9, 10, and 11.

Charles Wilson, manager of the General Electric's Bridgeport, Conn., merchandise department, told the conference that small appliance sales had in-

(Concluded on Page 2, Column 5)

## BORG-WARNER STATEMENT REFLECTS NORGE SHOWING

CHICAGO—Norge Corp., division of Borg-Warner Corp., has served to offset the decline in the automobile accessories field and has enabled the company to maintain an unusually strong current position in the face of declining earnings, according to the company's balance sheet of Sept. 30.

Current assets of the company are shown by the statement to be \$13,537,085, of which \$3,051,685 was in cash, and \$5,099,858 was in marketable securities, the value of which was approximately \$4,560,000.

Against this were current liabilities of only \$1,349,849, leaving a net working capital of nearly \$12,200,000, which was slightly more than was shown at the close of 1931.

During the first nine months of this

(Concluded on Page 2, Column 2)

## Electromaster Appoints Honolulu Distributor

DETROIT—J. W. Podmore and Sons, Honolulu, have been appointed distributor of Electromaster, Inc., manufacturer of Electrochef and Waldorf electric ranges, for the territory of Hawaii, according to Gerald Huett, sales promotion manager of Electromaster, Inc.

Arrangements for the distributorship were completed by H. M. Robins Co., export factor for Electromaster.

## GIBSON SALES INCREASE IN SEPTEMBER

GREENVILLE, Mich.—Business of the Gibson Electric Refrigerator Corp. was 411 per cent greater in September, 1932, than in September, 1931, according to C. J. Gibson, president of the corporation.

## Utilities To Build Good Will Toward Merchandising With Advertising

By Roy Baird

JEFFERSON CITY, Mo.—The Missouri Association of Public Utilities is now conducting a state-wide advertising campaign in the newspapers to build up good will toward utility merchandising.

Quarter-page advertisements are built around extracts from an address, "An Outsider Looks In," delivered by W. R. Herstein, president of the Memphis Chamber of Commerce, before the thirty-second annual convention of Electragists International, Oct. 12, at Kansas City, Mo.

Quoting Mr. Herstein, the extracts read: "It is my firm conviction that utility merchandising activity saved the day for manufacturers of quality products. From the first, the utilities stood for excellence in household appliances, and retrieved the rapidly disappearing market for devices which had something besides cheapness to recommend them."

"Not only this, but the injection of adequate capital, competent merchandising men, and skillful advertising into the situation soon developed the public taste for these commodities to a degree which could not have been attained in years by any other interest."

"We have become accustomed, in recent years, to vigorous protests on the part of various dealers, against what they term the unfair competition of the power and light companies in the merchandising field, though few, if any, specific instances of unfairness have been exposed."

### Built on False Hope

"It is reasonable to assume that the proponents of this agitation have in mind the belief that if the power companies are excluded from the field, the retail interests will fall heir to the volume of sales which the power companies have built up.

"In my opinion this is a false hope. I believe that the business created and enjoyed will simply disappear, and even the volume resulting to the retail trade in general will be considerably impaired.

"The business of merchandising electrical devices requires persistent advertising and constant sales effort. The ordinary retailer, such as the furniture, drug, or hardware dealer, as well as the department store, has so many lines to exploit that he cannot give his electrical line the special attention it requires.

"Good features of utility merchandising should be recognized and capitalized intelligently, and not combated."

### ELECTRAGISTS' REPORT

KANSAS CITY, Mo.—The place and prospects of the contractor-dealer in the electric appliance merchandising picture was discussed at the convention of Electragists International by Robert J. Nickles of Madison, Wis., chairman of the special merchandising committee of the National Electrical Contractors Association.

Mr. Nickles' report was based on a survey made among the contractor-dealer members of the association. Ninety-six per cent of the Electragists contacted by the committee definitely favored the elimination of the utility as a merchandising competitor.

### Objectionable Utility Practices

The following utility practices were considered objectionable by the members contacted: trade-in allowances, premium offers, long-term payments, small down payments, unscrupulous high-pressure salesmen, utility executives who are not sympathetic to dealer cooperative plans.

Discrimination against certain contract-dealers, failure of utilities to keep separate merchandising costs, free lamp renewals, direct solicitation by employees whose salaries are paid by operating departments, exclusive selling franchises demanded and secured from distributors and manufacturers of appliances, special inducements made to prospects.

Threats to service only utility-purchased appliances, and operating free repair departments.

Likewise the effect of the Kansas and Oklahoma laws against utility merchandising are covered in Nickles' report, with the statement that almost without exception, the contractor-dealers in these states who were contacted are in favor of the present laws. We quote that section of the report in full:

"Realizing that the merchandisers of electrical appliances throughout the country are watching the results being obtained in the states of Kansas and Oklahoma, as a result of the passage of laws in these states prohibiting the utilities from merchandising, a very careful, painstaking survey was made through a broad distribution of questionnaires, and by means of a considerable amount of correspondence.

"Almost without exception, the electrical contractor-dealers contacted in these states expressed a pronounced approval of the law. Admitting, however, that due to the unusual economic conditions surrounding the sale of almost every commodity, the true results cannot definitely be ascertained until such time as merchandising activity returns to a normal trend."

"The utilities of Kansas and Oklahoma in most cases resigned themselves to the new laws and entered into whole-hearted cooperation with the dealers.

"I am not presuming to either uphold or condemn the effectiveness of such legislative action in other states, but am prone to suggest that before final judgment is passed, we withhold our opinions until such time as these laws will have demonstrated whether or not the utility can best function through the medium of dealer merchandising outlets that have established stability."

### Constructive Suggestions

Mr. Nickles' committee has not contented itself with a survey of existing competition and its faults. It has made some most constructive suggestions to help the contractor-dealer sell more electrical merchandise, and also to benefit every legitimate member of the electrical industry.

Acknowledging the share which central station companies have contributed to market-development work, the Nickles committee suggests that local utilities take the initiative in bringing about the adoption of the following principles:

"First: All electrical appliances offered for sale shall be of such manufacture as to assure safe and dependable service.

"Second: The utility should recognize as the proper retail cash price of any appliances, an amount that allows the electrical contractor-dealer (selling at that price) a gross profit not less than is customarily obtained from its discount on such item.

"Third: The foregoing is not intended to apply on shopworn, damaged, repossessed, or obsolete items.

### Exclusive Sales

"Fourth: Utilities shall not accept the exclusive sale of an appliance, unless equivalent terms are available to the contractor-dealer.

"Fifth: No premiums shall be given, nor trade-in allowances made in connection with the sale of any appliance, unless all agencies selling that same appliance are offered participation at the expense of the utility. Manufacturers' national campaigns based on either of these inducements are not acceptable.

"Sixth: Coordinated advertising should be developed by the utility with the contractor-dealer, with the view of making available to the contractor-dealer all reasonable cooperation in advertising, displays and sales promotion.

"Seventh: Down payments, carrying charges and the length of instalment terms shall permit of fair competition. Small appliances, if sold on instalment terms, shall carry an adequate financing charge. Manufacturers' national policies, when inconsistent with sound business practice, are to be discouraged.

### Salesmen Compensation

"Eighth: Compensation of utility appliance salesmen shall be such as to attract and hold responsible representatives, and should be dependent upon the total added load from all retail outlets and not merely from their individual sales. The activities of all utility salesmen should be controlled so as to avoid misrepresentation and other unfair selling tactics.

"Ninth: In extending its service to new customers, the utility must not make the purchase of appliances from any given source a factor in the sale of appliances.

"Tenth: The utility should segregate all merchandising accounts from operating accounts. The presentation to the public of appliances not having reasonable customer acceptance, is a promotional activity and as such should be charged to the appropriate operating account in accordance with the recognized Uniform Classification of Accounts."

### BORG-WARNER STATEMENT REFLECTS NORGE SHOWING

(Concluded from Page 1, Column 5) year, the company purchased an additional 18,400 shares of its own common stock, making in all 79,925 shares of common stock which have been reacquired, as well as 2,421 shares of 7 per cent preferred.

Moderate profits were shown by the company in each of the first two quarters of this year, but the third quarter's operations resulted in a deficit which more than wiped out the earnings of the first six months of 1932.

The following table shows the net earnings by quarters, with comparisons:

	1932	1931
First	\$167,722	\$329,792
Second	263,405	755,053
Third	463,635*	182,429
Nine months	\$ 32,508*	\$1,267,274

\*Net loss.

Borg-Warner common stock was placed on a \$1 quarterly dividend basis, July 1, 1928, and that rate continued after the payment of 50 per cent stock dividend in 1929 to July 1, 1930, when a \$3 basis was established.

The rate was cut to a \$1 yearly rate in the first quarter of 1931, and payments discontinued a year later.

## Wins \$20,000 Suit



GEORGE B. BRIGHT

## BRIGHT GETS VERDICT IN SUIT AGAINST ICE FIRM

(Concluded from Page 1, Column 3)

Co. acquired the properties and business, he was to receive a commission of 3 per cent of the purchase price.

On Jan. 1, 1930, the properties were acquired by the City Ice and Fuel Co., at which time they offered to pay Bright \$4,200—the cost of the audit and expenses. Mr. Bright refused this and entered suit, claiming that he was entitled to 3 per cent of the purchase price.

Judge Raymond, in denying a motion by defense counsel for a directed verdict in favor of the defendant, had this interesting comment to make on the type of services rendered by the plaintiff:

"To speak of the plaintiff in this case as a real estate agent, or one seeking to do business for a commission through the sale of properties, is to put him in a class in which he does not belong.

"That was not his purpose, that was not his business, that was not his intent. It was not the thought of the persons who employed him to effect the sale of stock or of real estate; the essential effort was to bring about the consolidation of these several ice companies under one management.

"A study of the operations by this thoroughly competent refrigeration engineer indicated that the profits could be theoretically—and practically undoubtedly—increased by such a merger."

Mr. Bright expressed his appreciation to the court and jury for their patience and their recognition of the ethical questions involved in the suit.

"I had rendered a definite service and I wanted recognition of this fact," he said. "My entire career and the measure of my success have been built upon the theory that if a man's word is no good his contract is little better."

"Harry Norvell (president of the City Ice and Fuel Co.) with whom I had conducted most of my negotiations in this matter is dead. Because legal machinery prevented me from using letters or quoting conversations to show what had transpired between us, it looked for a while as though I were to be defeated because death had deprived me of a friend in whom I had trust and faith that I should be fairly treated."

Attorneys Frank C. Sibley of Detroit, and Donald G. Slawson of Kappan, Uhl, Bryant and Snow of Grand Rapids, represented the plaintiff.

## DEPARTMENT STORE SALES PLAN ANNOUNCED BY G. E.

(Concluded from Page 1, Column 1)

ditional employees, and are completely relieved of service, sales, sales training, installation, warehousing, and inventory responsibilities. These factors are taken care of by the General Electric refrigerator distributor in that particular area.

Additional floor space in the department store's electric appliance department is the only requirement for the new plan. In this space there is set up a General Electric "Store within a Store on Household Street," and a household economy institute supervised by an experienced home economist.

Specially trained salesmen from the distributorship are placed in this department and handle all inquiries, close sales in the department, and follow up prospects outside.

Besides benefitting from the national newspaper and magazine advertising program of the General Electric Co., the retail outlet is given the use of the General Electric Kitchen coach at regular intervals.

Upon the introduction of this "Controlled Sales Plan" at Hovey's department store, an advisory board for the institute was organized among the society leaders of the city.

Twenty-six women either presidents of women's clubs or leaders of civic clubs volunteered to act in advisory capacities. The household economy institute is directed by Mrs. Mable F. Neal, home economist, and the G. E. "store within a store" is managed by T. F. Maguire.

## Ahrens Wins G. E. Sales Campaign

(Concluded from Page 1, Column 5)

moved from ninth place to fifth in the final week of the campaign, and was elected secretary of the treasury.

R. Cooper Jr., distributor in Chicago, will be secretary of commerce in the new cabinet; H. H. Courtright, Fresno, Calif., secretary of health; and E. O. Cone, El Paso, Tex., secretary of education.

### 1,000,000 Votes Cast

Many changes were made during the final week of the campaign when more than 1,000,000 votes were cast. Secretary of Health Courtright made the largest gain for the week, chalking up a total of 71,672 votes and moving from twenty-third to twelfth place.

Courtright lagged behind L. H. Bennett, San Francisco distributor, throughout the entire campaign and it was predicted that Bennett would obtain the cabinet position. However he could not cope with the final spurt of Courtright's henchmen.

A. Wayne Merriam, Schenectady, N. Y., netted more than 46,000 votes the last week of the contest, and moved up two places in the list. S. C. Griswold, Dallas, Tex., polled 49,000 votes in that period which shoved him up three places.

### Caswell Makes Gain

Syd Caswell, Detroit distributor, came in with more than 55,000 ballots the last week and moved upward eight places as did Gordon Smith, distributor in Birmingham, Ala., who turned in nearly 30,000 votes.

With few exceptions every candidate who failed to obtain a cabinet post turned in more than his quota of votes for the concluding week, even Bennett who was defeated by Courtright polled more than 35,000 votes and moved from twentieth to seventeenth place on the list.

### Contest Increases Sales

Philip H. Harrison, Newark, moved up one place for the week with a total of 30,000 ballots. M. B. Mendenhall, distributor in Davenport, Iowa, who was in thirtieth position at the end of the eighth week moved to twenty-third position.

The campaign, according to General Electric officials resulted in a large increase in sales and provided more than \$30,000 in cash bonuses for salesmen in all parts of the United States.

Arthur S. Dunning, Duluth, Minn., who was elected president of Refrigerator last year and inaugurated last February in Miami, Fla., will officially end his term next Feb. 15 when Ahrens will be installed.

## WINNERS ANNOUNCED IN FRIGIDAIRE RADIO CONTEST

(Concluded from Page 1, Column 2) which the radio contest may be given part of the credit was the fact that our household unit sales went up 43 per cent over the sales last year, in the last 15 days of September, the first two weeks of the contest."

To assist the dealer organization and to draw people to showrooms, a teaser window poster was sent out by the factory for exhibit a week before the announcement of prize winners stating that the names of winners would be posted in windows the week following.

The poster carrying the winners also has pictures of the prizes. Those who won prizes other than the automobiles are:

Frigidaire winners: Mrs. Philip Beaujeu, Potsdam, N. Y.; J. M. Thompson, Warren, Ark.; Mabel K. Millsbaugh, Anderson, Ind.; Mrs. J. J. Jackson, Garrettsville, Ohio; Dr. Henry Raile, Salt Lake City, Utah.

Grace M. Chambers, Houlton, Ore.; Mrs. A. L. Papworth, Salt Lake City, Utah; Mary Ivy Smith, Locust Dale, Va.; Roy McCullough, Jr., Birmingham, Ala.; Miss Bertha Miller, Columbus, Neb.

Winners of \$25 cash awards are: Miss Genevieve Taylor, Beaumont, Tex.; E. W. Whitehead, Ingleside, Norfolk, Va.; F. E. Southworth, Weehawken, N. J.; William J. Lefferts, Bristol, Pa.

Arthur Parker, Huntington, W. Va.; Edward Haverfield, Toledo; James S. Eiseman, Mt. Airy, Md.; Mrs. Alice C. Mathers, Hemet, Calif.; Roscoe K. Stockton, Denver; Mrs. Tom Watson, Commerce, Tex.

Winners of \$10 awards are: Paul N. Jorgensen, Gravette, Ark.; Mrs. Thomas B. Walter, Richmond, Ind.; Mrs. Carey C. Clemens, Miami, Fla.; Mrs. George G. Caldwell, Monmouth, Ill.; Mrs. Helen D. Pace, Minneapolis.

Mrs. W. F. Ferguson, Merrick, L. I., N. Y.; N. B. Clabaugh, Bakerton, W. Va.; Mary Alexander, Fostoria, Ohio; C. B. Watson, Omaha; Jess Rieboldt, Sturgeon Bay, Wis.; Letha L. Ringenberg, Detroit; F. I. Wee, Decatur, Ga.; Mrs. E. G. Thornton, Pullman, Wash.; Margaret G. Dunn, Adrien, Mich.

B. F. Haas, Voiga, S. D.; R. T. Kaempfer, Verona, Mo.; Mrs. E. D. Everett, Roswell, N. M.; E. A. Manwarin, Oklahoma City; Furman A. Johnson, Washington, D. C.; Mrs. James MacFadden Dick, Jr., Salisbury, Md.

## DISTRIBUTORS DISCUSS G. E. CHRISTMAS DRIVE

(Concluded from Page 1, Column 5)

increased 300 per cent since June, necessitating the reopening of the small appliance factory on a 24-hour, six-days-a-week schedule, and placing the wire plant on a 19-hour, six-day-a-week basis.

A. Uhalt, dealer division manager, announced that 100 General Electric Kitchen coaches would be in actual service shortly, and that 34 coaches were now in the field.

A. L. Scaife, of the merchandising division, presented a plan for the more intensive sales training of salesmen, including advanced ideas on salesmen slide films, correspondence courses and product schooling.

### Product Operations

Product operations of the new G. E. Junior line were explained by A. M. Sweeney, manager of the product and distribution division, while commercial applications were outlined by W. M. Timmerman, commercial engineer.

Ralph D. Cameron, head of department store activities, outlined the new method of merchandising in department stores, the plan of setting up a General Electric "store within a store."

Other speakers included Jean De Jen sales campaign director; Miss Edwina Nolan, director of home service; Earl Norling, assistant to Sales Promotion Manager Daily; and

# LEADS 3 TO 1 IN PUBLIC PREFERENCE



## Unbiased Surveys Show 40% of Prospects Prefer General Electric —3 Times More Than Any Other Make

**WITHIN** the past six months distinctly different investigations of the electric refrigerator market have been made by Chicago Tribune, Hearst newspapers, Literary Digest, Popular Science, Time Magazine and others. These unbiased surveys by wholly disinterested parties, represent all classes of homes—and each one bears out the findings of all others.

In these surveys, it was found that over 40% of the prospective buyers of electric refrigerators expressed a definite preference for General Electric—three times more than for any other make.

Such outstanding public preference means more sales for the

G-E retailer—less sales-resistance for the G-E salesman—greater retailer profits with less effort.

No other refrigerator has been so effectively pre-sold—has won such wide public acceptance as the standard of refrigeration excellence. Already, one out of every three homes having modern refrigeration has a General Electric. Today, the market of the G-E retailer is even greater, for with the addition of the G-E Junior line to that of the famous Monitor Top, there is a General Electric model, size and price for every purse.

General Electric Company, Electric Refrigeration Department, Section DF112, Hanna Bldg., 1400 Euclid Ave., Cleveland, Ohio.

**GENERAL**  **ELECTRIC**  
ALL-STEEL REFRIGERATOR

# News of Companion Electric Appliance Lines

## HUGHES CONTEST LED BY MIAMI SUPPLY CO.

CHICAGO—General Electric Supply Co. of Miami, Fla., has jumped into the lead in the Hughes Cup Tournament for Hotpoint range distributors and has also achieved the distinction of being the first of the contesting organizations to make 100 per cent of quota, according to reports compiled at the G. E. Hotpoint headquarters at the end of the ninth week of the contest.

With three fifths of the contest period gone, Crescent Electric Co. of Davenport, Iowa, is in second place with 95 per cent of quota with Hawaiian Electric Co. of Honolulu, which lead for a short time, in third place with 89.2 per cent of quota.

H. G. Bogart Co., Toledo distributor is in fourth place with 85 per cent of quota with R. Cooper Jr., Inc., of Chicago right behind with 82.1 per cent of quota. Gentsch & Thompson of Boston holds sixth place with 77.6 per cent of quota.

## 1931 RADIO, PHONOGRAPH PRODUCTION \$194,313,602

WASHINGTON, D. C.—Radio apparatus and phonographs valued at \$194,313,602 were made last year in the United States, a decrease of 59.8 per cent as compared with the \$476,041,054 reported for 1929, according to information from the Census of Manufacturers made available recently by the Department of Commerce. The following additional information was provided:

The more important items which contributed to the total for 1931 are as follows: Radio receiving sets for the home (excluding batteries), except combination radio and phonograph units, 3,647,499, valued at \$113,214,321; all other receiving sets (including automobile and aircraft sets), valued at \$4,347,037.

Combination radio and phonograph units, 73,603, valued at \$6,310,442; receiving tubes for initial equipment, 24,944,796, valued at \$13,263,520; receiving tubes for replacement, 24,317,552, valued at \$13,712,552.

Phonographs, not including dictating machines, 48,276, valued at \$1,674,010; records and blanks, valued at \$7,946,355.

This industry, as defined for census purposes, embraces establishments engaged wholly or principally in the manufacture of radio apparatus, phonographs, and parts and accessories for either or for both. Prior to 1931 the manufacture of phonographs was treated as a separate industry, but the increasing production of radio apparatus by the manufacturers of phonographs and the introduction of the combination radio-phonograph unit made it desirable to establish the present classification.

As manufacturers of radio apparatus were formerly classified in the "Electrical machinery, apparatus, and supplies" industry, the schedule for which did not call for detailed data on this class of products, comparable statistics for years prior to 1931 can not be given except for certain items.

The number of establishments in the industry last year was 214, with an average of 36,373 wage earners for the year and wages totalling \$35,031,461.

The cost of materials, fuel, and purchased electric energy amounted to \$88,280,906, and the value added by manufacturer to \$104,044,265.

## Wagner Joins Staff of Mutschler Bros.

NAPPANEE, Ind.—H. D. Wagner, formerly with the refrigeration department of General Electric Co., has joined the Mutschler Brothers Co., manufacturer of Hotpoint water heaters, here. He will act as sales manager of the newly created electric water heater division of which R. C. Chapman is in charge.

## General Electric Appoints Dealers For Oil Burning Furnace in 54 Cities

NEW YORK CITY—Appointment of dealers in 54 cities for the new General Electric oil furnace has been announced by the air conditioning department of the General Electric Co.

The General Electric oil furnace features a new principle, "impact-expansion atomization," whereby each drop of fuel oil is broken down into more than 100,000,000 particles, and built-in electric controls. The G. E. thermal control is equipped with a Telechron clock and separate day and night temperature dials, and needs no winding or resetting.

Cities in which dealers for the General Electric oil furnace have been established are as follows: Albany, N. Y.; Allentown, Pa.; Atlantic City, N. J.; Baltimore; Bayshore, L. I., N. Y.; Boston; Bridgeport, Conn.; Bronx, N. Y.; Brooklyn, N. Y.; Camden, N. J.; Cedarhurst, L. I., N. Y.; Fall River, Mass.; Floral Park, L. I., N. Y.; Freeport, L. I., N. Y.; Harrisburg, Pa.; Hartford, Conn.; Hempstead, L. I., N. Y.; Huntington, L. I., N. Y.; Hyannis, Mass.; Jamaica, L. I., N. Y.; Kingston, N. Y.; Lancaster, Pa.; Lebanon, Pa.; Morristown, N. J.; Newark; New Bedford, Mass.; New Haven, Conn.; New London, Conn.; New Rochelle, N. Y.; New York City; Nyack, N. Y.; Patchogue, L. I., N. Y.; Paterson, N. J.; Pawtucket, R. I.; Philadelphia; Pittsfield, Mass.; Poughkeepsie, N. Y.; Providence, R. I.; Reading, Pa.; Rockville Centre, L. I., N. Y.; Rochester, N. Y.; St. George, N. Y.; Schenectady, N. Y.; Springfield, Mass.; Stamford, Conn.; Trenton, N. J.; Utica, N. Y.; Washington, D. C.; Waterbury, Conn.; White Plains, N. Y.; Wilmington, Del.; Woonsocket, R. I.; Worcester, Mass.; York, Pa.

## Timken Opens Plant In Canada

WINDSOR, Ont.—Timken Silent Automatic of Canada, Ltd., has been organized here as a subsidiary of the Timken Silent Automatic Co., manufacturer of oil burners of Detroit. The new company will supply Timken Silent Automatic burners bearing the "Made in Canada" label to Canadian dealers.

The chief barrier to sales in Canada in the past has been the absence of this label from the burner, and a much larger volume of business is anticipated from this market as a result of the Canadian subsidiary, according to officials of the company.

Officers and directors of the new company are: H. W. Alden, chairman of the board; Fred Glover, president; Haldean Finnie, vice president and general manager; D. S. Devor, vice president; W. C. Wood, secretary and treasurer. These officers also hold similar positions in the parent company.

All sales, sales promotion, and advertising assistance given to Canadian dealers will continue to be handled at the main office in Detroit, under the supervision of E. V. Walsh, general sales manager of the parent company.

This is the first time that the Timken Silent Automatic organization has aggressively sought business outside of the United States, state the officers of the company.

Canadian dealers will be required to meet the same service training and financial responsibility required of United States dealers.

## A Modern Bathtub

## Fourth Range Sales Manual Sells Salesmen On His Organization



Cora Sue Collins, diminutive screen star in "Silver Dollar Baby" gives Louise Fazenda's Scotch terrier, "Angus," a bath in a Maytag washing machine.

## A Modern Bathtub

## Fourth Range Sales Manual Sells Salesmen On His Organization

(Editor's Note: This is the fourth of a series of reviews on the six-assignment Electric Cookery Salesmanship instruction course for General Electric Hotpoint range salesmen, prepared by LaSalle Corp. Service (division of LaSalle Extension university). This review is based on Assignment 4, "Selling the Source.")

By Elston D. Herron

This manual has a dual object. First, it attempts to give General Electric Hotpoint range salesmen confidence in their product and its manufacturer. Secondly, it instructs salesmen in "selling the manufacturer and dealer" as a step in complete range sale procedure.

Entire first part of the book is devoted to enumeration of electrical products which have had their birth in General Electric laboratories.

### Give Prospect Confidence

Following this section are several pages pointing out to the salesmen that the Hotpoint range has been developed by an organization recognized for achievements in electrical development, and is consequently worthy of the salesmen's confidence.

Remainder of the manual instructs the salesmen in giving his prospects confidence in the manufacturer and in the General Electric dealer.

Play up the G. E. trademark. Tell the story of the Calrod. Describe other of

General Electric's inventions and developments, the salesman is advised.

When the prospect says, "I think I'll look around at other ranges first," that is the salesman's cue to emphasize more strongly than ever the exclusive features of the Hotpoint range, and the story of the General Electric Co., says the manual.

When the prospect feels that he should buy another range because he is a stockholder in its manufacturing company, the salesman should point out that buying the range will bring him only a fraction of a cent per share of stock he holds, while a Hotpoint will save hundreds of dollars in a few years, the assignment material says.

Having convinced the prospect as to the manufacturer's worth and dependability, the salesmen's next move is to "sell" the company (dealer or distributor) by whom he is employed.

Of this, the manual states: "Sell your dealer's reputation. Sell the electrical merchandising experience of your company. Sell your dealer's financial stability. Make references to customers who have been pleased with your company's services."

### Selling Service Idea

The book advises further that the salesmen make a talking point of the fact that his dealer will supply dependable service, but warns, "Handle the service sale with silk gloves. Don't give buyers the impression that service is extremely important because the range won't need much service."

"Sell your home economist." Remember that "loyalty to your company pays cash dividends," are other bits of instruction in this fourth assignment.

Strong is the manual's attack upon "high pressure" salesmanship. It says that this type of selling is the result of a permanent one, and is undesirable.

"People like to feel that they have bought—not that they have been sold," continues the book, and the G. E. Hotpoint salesman must be one who sells his customers a product which gives permanent satisfaction—one which will produce more sales in the future.

### Necessity of Personality

Next, the manual has things to say about the absolute necessity of a salesman's having a pleasing personality if he is to be successful as a seller.

His appearance, manner, words, and tone of voice must all be pleasing to the prospect.

Says the assignment: "Personal appearance is an important factor in sales success. Courteousness of manner is as important as appearance. Genuine enthusiasm breeds enthusiasm in return."

"You must use well-selected, interesting, convincing words. Think about, and understand the customer's problems. Get the service attitude."

"Absolute sincerity is the key to the confidence of your customer. Be resourceful. The habit of careful and systematic observation of the sales situation, plus a thorough knowledge of your product, will contribute much to the development of resourcefulness."

## Health-O-Mist Markets Humidifier, Economizer

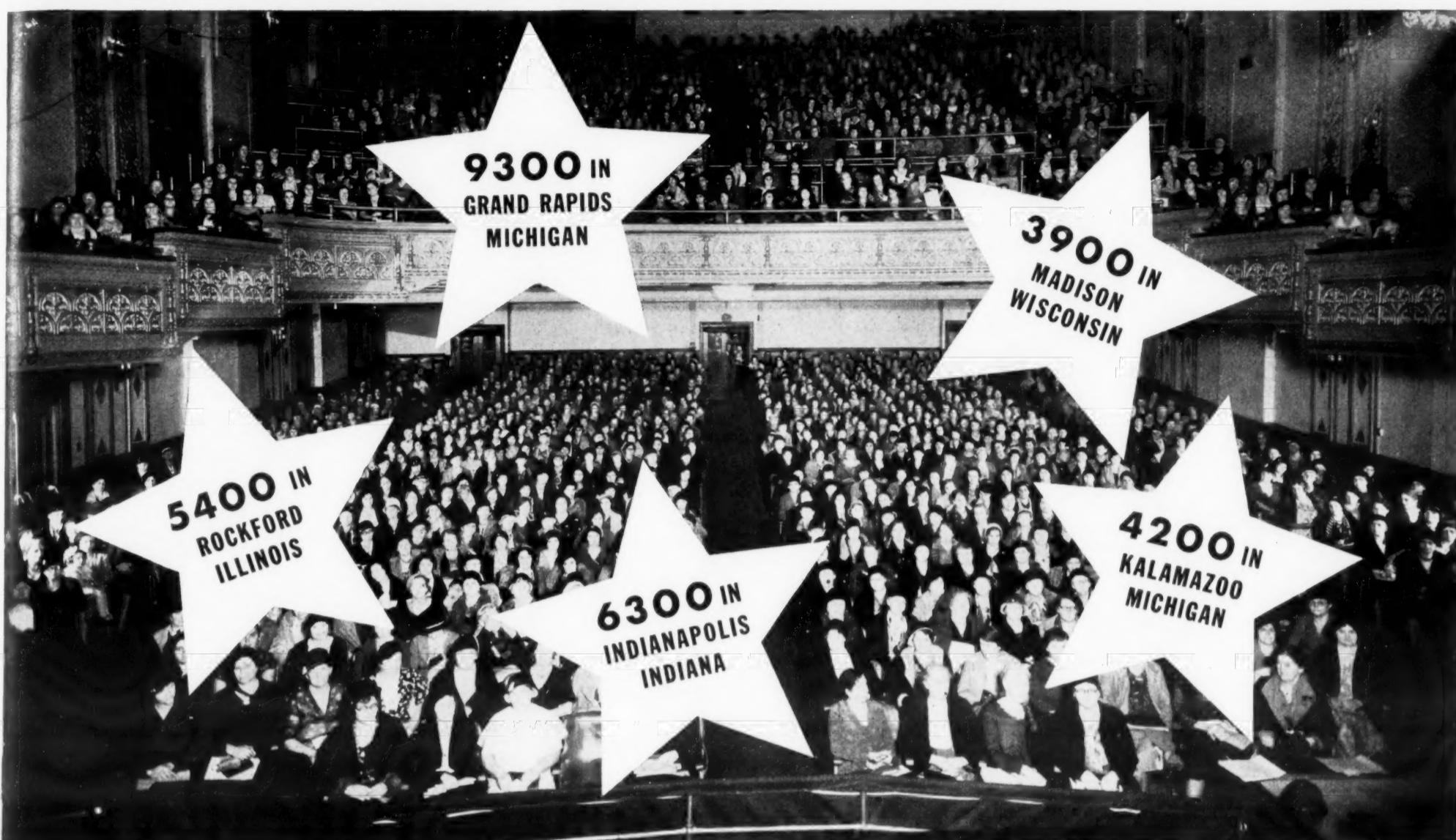
COLUMBUS, Wis.—Health-O-Mist, a combined humidifier and economizer has been placed on the market by Health-O-Mist Humidifier Mfg. Co. here. The inventor, J. N. Youness, claims that it can be used satisfactorily with any fuel.

This device is made in various sizes for large and small buildings. It consists of a copper tank through which passes a copper welded smoke pipe. This smoke pipe is covered with water from the city supply, and as hot gases from the heating plant warm the fluid, the water is evaporated, and room air is circulated over the surface of the water, which is humidified. A float valve keeps the water at a constant level.

## Oil Burners Next Major Appliance For Retail Store, Kresge Man Says

NEW YORK CITY—"Oil burners are the next logical item for retail stores in conjunction with Brooklyn Edison Co. Executives of the New York Edison Co. will be invited to the November clinic of the Metropolitan group in which a cooperative store-utility program for merchandising major appliances in the metropolitan area will be submitted, according to plans made at this clinic."

In preparation for this meeting a utility committee of Manhattan buyer headed by L. H. Burgess, home furnishings merchandise manager of James McCreery & Co., opened the discussion at the clinic by outlining the steps in the cooperative program.



# STANDING ROOM ONLY!

**C**ONGRATULATIONS to the Kroger Food Foundation, research laboratory for the five thousand stores of the great Kroger food distributing chain. And congratulations to the Kelvinator distributors and dealers who helped make the Kroger Cooking School such a glowing success in Grand Rapids, Kalamazoo, Madison, Wisconsin, Indianapolis, and Rockford, Illinois.

In these five cities more than twenty-nine thousand women packed the huge auditoriums. Hundreds were turned away. There was "Standing Room Only" as thousands of women gathered to see Kelvinator share the spotlight with the famous Kroger food products.

There will be many more Kroger Schools. And many more thousands of interested women will learn about Kelvinator. And many more Kelvinator dealers will derive benefits from this type of factory cooperation.

Kelvinator was delighted by the invitation to participate in the Kroger Schools, carrying with it, as it did, the endorsement of such a widely known and highly respected institution. And added gratification was found in the opportunity, offered by this participation, to render another valuable service to Kelvinator representatives—to help them make money out of the Kelvinator franchise. . . . KELVINATOR CORPORATION, 14245 Plymouth Road, Detroit, Michigan.

# Kelvinator

## MERCHANTISING SECTION ELECTRIC REFRIGERATION NEWS

The Business Newspaper of the Refrigeration Industry

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## New Distribution Methods

**A**RE new distribution methods a master solution to all of the vexing problems which are furrowing the brows of chief executives in the refrigeration industry today?

Many indications point toward the possibility that final returns for the year will show first drop in volume the industry has experienced in the last decade. Even if 1932 unit shipments should match those of 1931, the great reduction in dollar volume, coupled with smaller profits, would be enough to start the top men thinking.

Almost all the leading manufacturers are wondering if their present distribution systems are not just a bit antiquated. They are experimenting—gingerly, to be sure—with new ideas which they hope are a little better geared to the times.

These isolated and localized experiments are being watched hawklike, and their results are being studied with sliderules and microscopes. Findings of these studies may influence the whole future trend of electric refrigeration selling.

Among the trends and movements in distribution which might be noted are these:

**GENERAL ELECTRIC** is making household appliance merchandisers out of its electric refrigeration distributors. Selling the all-electric kitchen is the big G. E. idea now. Laundry equipment has been added to refrigerators, ranges, and dishwashers; and, in some cases, G. E. distributors have taken on traffic items, such as fans, toasters, irons, percolators, and curlers.

**SERVEL** is trying a limited experiment in direct selling. Retail stores have been established in Buffalo, Cleveland, Pittsburgh, Chicago, and St. Louis.

**WESTINGHOUSE** is moving more and more of its refrigerators through its old established wholesale outlets, the various Westinghouse Electric Supply Corp. houses. G. E., too, is following this route. A quartet of General Electric Supply Corp. houses have recently taken over areas formerly served by G. E. distributors. (This may be a temporary move, however; and when satisfactory new independent distributors can be found, it seems likely that the Supply Corp. houses may yield their refrigeration distribution franchises.)

**FRIGIDAIRE** is continuing to establish factory branches in various parts of the country. Territories in which strong independent distributors hold forth are left unmolested; but weak distributors, and those whose financial support becomes shaky, have been replaced with branches. Kelvinator, on the other hand, has fewer branches this year than it had last.

**KELVINATOR** and Frigidaire are both negotiating directly, in some instances, with department stores. Smaller manufacturers, like Buckeye, have been doing this since the first of the year.

**MAYFLOWER** is turning its attention more toward specialty distributors. In the past, the large "catalog houses" (wholesale jobbing concerns which have so many items to sell that an electric refrigeration lines occupies only a small corner in a big catalog) have absorbed most of Mayflower's output. No interruption of relations with the big houses is anticipated, but unoccupied territories, especially in the East, are being filled with specialty distributors.

**CROSLEY** is selling its refrigerators through distributors with unusually limited territories. More than 100 distributors are handling the Crosley line—more than twice the number of distributors maintained by most other manufacturers.

**GIBSON** and **UNIVERSAL COOLER** are doing a big "contract" business (making equipment for sale by other national distribution set-ups). **ZEROZONE** is also getting some of this business.

**O'KEEFE & MERRITT, ILLINOIS MOULDING** (King Kold), and a host of smaller concerns are intensively cultivating strictly local markets, and are making no attempt to get distribution outside a short radius from their factories.

Undoubtedly the advent of low prices is a major factor in causing manufacturers to seek new methods of distribution.

When there was a wide spread between production cost and list price, the company which got the most business was the company which could figure out the cleverest (and sometimes the most lavish) sales schemes. Nowadays manufacturers have smaller margins on which to operate, and their sales plans need revision to conform with the new situation.

During 1932, with most of the larger manufacturers competing on practically even terms as regards to price, making money in the refrigeration business has become chiefly a matter of production economy. Executives who understand this type of competition, like George Mason (who has long had a reputation for being a low-cost manufacturer) have profited as a result.

As the situation now stands few, if any, safe predictions can be made about the future of electric refrigeration distribution. Leading executives themselves don't know. All sorts of methods are being tried. Some are abandoning one course and following another. Others are trying the course abandoned by the first group. Everything is in a state of flux.

Two schools of thought may be noted in connection with today's thinking on distribution problems.

One school is that of the opportunist, the manufacturer whose only thought is selling some machines *now*, by any means which will work under present conditions.

The other school is that of the "long pull," the manufacturer who tries to establish policies which will maintain his standing for many years to come, even though his factories may stagnate for awhile.

Latter type of thinking is banking on a reasonably speedy "return of prosperity," upon the arrival of which they expect to be in a position comparable to the Biblical virgins who had their lamps trimmed and filled with oil when the bridegroom came.

Observing the results of the industry's trial-and-error procedure of feeling its way toward new distribution methods should make the next year highly interesting. Change is in the air.

### Gleanings from Other Periodicals

#### RESEARCH AND THE SMALL MANUFACTURER

**F**IVE years ago a definite trend of increasing influence of the larger manufacturing units was apparent. This situation has been modified by the events of the last two years, and in many lines under present conditions the small manufacturer is gaining in prestige through his ability to adapt his operations to a greatly reduced demand. Of course, in some lines large corporations continue to dominate their fields; yet the importance of the small plant in industry today is shown by government census reports which give an average of 33 wage earners per plant for all industrial plants in the country.

One of the advantages of large business over small enterprise is found in the research department and the laboratory. From raw material to finished product, large mass production processes are usually under laboratory control. This not only leads to better physical and chemical properties and increased speed of production, but it leads also to the utilization of by-products and elimination of waste motion.

The small manufacturer may often secure proper laboratory facilities and research cooperation through an outside commercial testing and engineering company, or it may be possible, as in the case of one group in Massachusetts, to organize a collective or cooperative laboratory to serve a number of individual manufacturers. The small manufacturer should find an advantage in association with a commercial laboratory at this time, because the demand for service may be varied from month to month to suit requirements.

In the period of industrial recovery ahead the fate of the large plant as well as the small plant will be decided by production and selling efficiency, but the large manufacturer usually has an advantage in a well organized research department. The small manufacturer will do well to consider how he can most effectively bring his research and laboratory facilities in line to meet competition.—*Iron Age*, Oct. 6, 1932.

## An Editor on Wheels

Stories of Interesting PLACES in the Refrigeration Industry

By GEORGE F. TAUBENECK

### Cincinnati, Ohio

Profitably ensconced in Detroit's swankiest speakeasy is a damed smart hat-check girl. From voluminous experience and long observation this girl produces the opinion that the country's best spenders come from Cincinnati.

Detroit's wealthiest, Cleveland's few remaining magnates, Pittsburgh's tycoons, Chicago's gang moguls, New York City's playboys—they all trade coats and hats for brass checks over this girl's counter.

But none of these bigwigs get her best selected, Grade A brand of smile. That is reserved for men with Cincinnati labels in their coats. Their tips are the biggest, and their humor the best.

After a few trips to Cincinnati, one can well believe that this hat-check girl's experience is not simply an idle string of coincidences. Cincinnatians live well, and love entertainment.

Hodge-podge as the physical appearance of this city may be, it is undoubtedly the brightest spot betwixt New York City and Chicago.

No other city between the Appalachians and the Rockies, save Chicago, can offer such smart hotels, distinguished music (both European symphonic and American rhythmic), good food, lively supper clubs, fresh stage entertainment, and scintillating social functions.

Cincinnati was the first really urban settlement west of the Alleghenies. It has never lost that position, and still ranks No. 1 in urbanity among midwestern cities.

One can grasp the above facts most quickly and most dramatically when coming upon Cincinnati at night by airplane. It's an exhilarating ride from Cleveland to Cincinnati by night plane, and each city one passes over—Cleveland, Dayton, Columbus, Springfield—is a new thrill and a fresh discovery.

Greatest thrill is the discovery of Cincinnati. One feels, upon making this discovery, that Columbus and Balboa probably had a dull time of it.

Droning along in comparative darkness, one suddenly catches sight of a vast sparkle and glow on the rolling terrain below.

Spread out underneath is a patterned mosaic of lights—glittering checkered-board street-rows, less bright square blocks filled in with white haze from home lights, and the startling red and blue glares of neon signs, which penetrate 1,500 feet of blackness searingly.

What a supreme moment Thomas A. Edison could have had at that sight!

Every lamp-maker from Cleveland's Nela Park, every public utility executive, every electrical contractor—looking down on that incandescent splendor—should feel his chest swell at the thought that his daily stint is helping to create a little bit of heaven to this muggy old earth of ours.

Daytime Cincinnati, however, is as disillusioning as a gorgeous creature of the night seen, minus her cosmetics and enhancing gowns, in the candid light of the afternoon after the morning before.

Sprawled and huddled over the enchanting southern Ohio hills, hug-

ging and choking the lovely Ohio river, smudging the skirts of the rising foothills of northern Kentucky, Cincinnati is—like all factory towns—an insult, and a dirty one, to nature.

It is smoky, smelly, grimy, and matter-of-fact. The gaiety of the evening becomes the money-grubbing of the day. Mazda charm fades into smoked severity.

Its debauch of natural beauty, however, Cincinnati should not be singled out for solitary condemnation. Other cities are as ugly, and uglier, by day. And after all, someone not brought up amidst trees and streams might see nothing amiss.

The fact remains, however, that were the city of Cincinnati not so obtrusively and clangingly there, the spot it has been built upon would remain one of the natural garden spots of the world.

Lord Bryce, the keen English observer who once told us more about American democracy rule than we knew ourselves, stated that the worst feature of our government is our municipal administration. And that's almost always true.

But Cincinnati is different. With the possible exception of Milwaukee, it is probably the best-governed city in the country.

And instead of looking upon their municipal citizenship with distaste or apathy, Cincinnatians are actively proud and enthusiastic.

Their civic pride is not that of the boom-era booster, or the hot-air luncheon club speaker, but one of cooperative endeavor, a feeling enlarged by each citizen's notion that he actually has a hand in the proceedings.

As one might guess, a city manager runs the city. This manager is selected by a small council, which is elected by proportional representation along non-partisan lines. Government by party is as nearly eliminated as could be possible.

Since 1925 the city has been run on this efficient, business-like basis. And the city is comparatively clean, well parked and paved; satisfactorily watered, dredged, educated, and hospitalized.

Racketeering has not yet gripped the city's throat. Crime statistics are flattering. So are statistics on public safety, public health, and fire losses. Tax rate is only 1 per cent of the assessed value.

Cincinnati is a classical city. Its German population has good taste in and appreciation for the fine and lively arts.

Cincinnati is a modern city. Its cubistic Netherlands Plaza hotel, its glittering night life, its intellectual up-to-dateness make it a solitary Oasis of Modernity between New York City and Chicago.

Cincinnati is a hard-working free-spending city, a city of grim and grimy factories nestled amongst glorious natural beauty. Lastly, it is a well-governed city. Great place Cincinnati.

### INSIDE DOPE

By George F. Taubeneck

(Concluded from Page 1, Column 4) the "baby midget" set (about the size of a small shoe box) which can operate on either ac or dc current.

International Radio has been turning out thousands of these in its Ann Arbor, Mich., plant in the last few weeks, and has been moving great quantities through cigar stands in hotel lobbies and office buildings.

Emerson Radio & Phonograph Corp., New York City, will soon bring out a similar line.

FOR HINTERLAND READERS WHO are still interested in automobiles, we offer the following advance dope:

Lycoming has a 12-cylinder, 200-hp. motor on the blocks, ready for the 1933 Cord. Outside of the Marmon 16-cylinder aluminum engine, no other American stock car approaches this motor in power.

Because of the low market for high-priced cars, few, if any, Cords were turned out in 1932. Manufacturer Errett Lobban Cord concentrated on his 8- and 12-cylinder Auburns, sales of which weren't so phenomenally successful as in 1931.

Helical gears, which operate silently at all speeds (including low and reverse) will be features of the new Dodge line.

Other radical Dodge changes include individually sprung wheels, doughnut

tires as standard equipment, and an "air-flowing" (highly streamlined) body. Base price will likely be less than \$700.

Walter Chrysler has effected produc-

tion economies this fall by using the Dodge plants to make parts for his Plymouth, De Soto, and Chrysler cars.

The new Plymouth, which is a six-base-priced at less than \$500, will somewhat resemble the Graham in appearance, with pronounced slants to the rear and radiator. About 22,000 of these will probably be turned out in November.

General Motors is grooming a bare-essentials Chevrolet (which probably will be given another name, to distinguish it from the regular Chevrolet) to undersell the model B Ford by considerable margin.

Buick's new body lines will surprise almost everybody. They are startlingly striking.

Already announced is a new method of closed car ventilation for Fisher bodies. This may be the first step toward completely air-conditioned automobiles. General Motors, having Frigidaire in its circle, should lead the field in this development.

The days of gear-shifting are said to be numbered. Automatic clutches are to be followed by automatic gear selectors and shifting devices, eliminating the awkward rod which has thus far seemed essential.

## COLE LISTS LEADERS FOR TOPPERS CLUB

**NEW YORK CITY**—Members of the Toppers Club (organization of star General Electric salesmen) of Rex Cole, Inc., General Electric distributor in this city, for the first nine months of the year are as follows, in order of rank:

### Retail Department Toppers

Retail department: Manuel Reina, Long Island City; Frank Siegmund, Long Island City; Andrew W. Zoltac, Flushing; Peter Parenti, Long Island City; John J. Delaney, Manhattan; George Comtois, Jamaica; Hans Omenig, Flushing; Harry J. Poh, Queens Village.

Adolph J. Wild, Queens Village; Jacob W. Voorhis, Long Island City; Robert W. Thompson, Long Island City; Edward J. Blanchard, Queens Village; Albert Y. Tucker, Bay Ridge; George S. Hutton, Staten Island; Anthony D. Langier, Bay Ridge.

Walter P. Pentz, Queens Village; Chauncey L. Krug, Flushing; Burt M. Strause, Flushing; William C. Kendall, Bay Ridge; Fred C. Newman, Flatbush; William Urbach, Flushing; Howard G. Paul, Jamaica; Joseph A. Cormier, Flatbush; William Shearon, Bond Street.

John H. Connelley, Bronx; Samuel Gottesman, Flatbush; Thomas F. Stratton, Jamaica; Edward A. Davies, Bay Ridge; John G. Cook, Bond Street; Charles A. Baker, Bond Street; Charles R. Bernard, Bay Ridge; Elliot Mangrum, Flushing; Edward Wiesner, Bronx; and Charles D'Orazio, Bond Street.

The commercial department claims a trio of star representatives who have made outstanding records this year to date, according to L. Howard Jenks, Jr., manager.

### Commercial Leaders

The three highest in the commercial department are William Aronstein, A. B. Salto, and S. Arne Larsson. Their standings make them eligible for election to the Toppers Club as senior members. William Greene of the same department is a junior Topper.

According to the new rules of the club, there will be an element of competition among the Toppers themselves for the privilege of attending the annual meeting of the Toppers Club.

In the retail department, for example, the two leading men in each division, provided that they are senior Toppers, will be selected to go on the trip.

Of the 44 men who will be selected to represent Rex Cole, Inc., at the annual meeting of the Toppers Club, 20 will be retail men, four commercial, 12 wholesale, and eight apartment house salesmen.

## O. F. STUEFER, INC., GIVES STORE DEMONSTRATIONS

**MINNEAPOLIS**—O. F. Stuefer, Inc., General Electric distributor here, has started plans for a refrigerator sales promotion campaign in cooperation with several local food store proprietors.

According to Frank H. Higgins, Stuefer secretary, a G. E. household refrigerator will be installed in each of the stores, for inspection by store customers.

Every week, the proprietor of each store will have printed a number of sale bills, and Stuefer refrigerator salesmen will distribute the bills to every house within a 10- or 12-block radius of each store.

Salesmen will use the bills—which will mention the G. E. refrigerator installed in the store—as door-openers for an immediate sales presentation, or will try to persuade each housewife contacted to come to the store to purchase some of the food items on sale, and to see the refrigerator demonstrated.

## DEPARTMENT STORE SHOWS REFRIGERATOR SALES GAIN

**DETROIT**—The refrigeration department of Crowley-Milner, department store here, showed an increase of 85 per cent in sales for the first 10 months of 1932 as compared to a similar period in 1931, according to M. W. Curtin, department manager.

M. Curtin attributes the increase to the widespread acceptance of electric refrigeration as a necessity, especially by landlords of small homes who have been forced to refurbish their houses in order to rent them.

In addition to handling standard makes, Crowley-Milner merchandises its own private brand refrigerator under the trade name "Supreme," made for Crowley-Milner by Universal Cooler Co.

## R. COOPER JR. OFFICIALS GET KITCHEN COACH

**DETROIT**—L. C. Kohlman, vice president and S. Nides, sales promotion manager of R. Cooper Jr., Inc., Chicago distributor for General Electric refrigerators and Hotpoint ranges, recently visited the factory of the Aerocar Co. here to drive away the General Electric Kitchen coach which will be used in the Chicago area.

# "--keeping dealers is one of the most important tasks of the year."

- This parting sentence of Electric Refrigeration News' editorial for November 2 is so pertinent and apparent to electric refrigeration manufacturers that they hardly need it called to their attention.

There is no problem to discover this fact, but **what to do about it** is serious.

- The terrific costs of a grasshopper organization have no place in a period of tight buying. Building a dealer organization is costly enough without a high percentage of switching, with its attendant loss of stable representation and the necessity to train new outlets.

The growing difficulty of securing new outlets as replacements because of the burden of free service on previously sold and guaranteed jobs is apparent to every manufacturer.

- Willingly or not, manufacturers must face the necessity for maintaining a permanent selling organization.

If manufacturers would have efficient selling organizations that are permanent, they must have efficient refrigerators that will give permanent performance. And that efficiency must be provable to the public.

- No refrigerator can give either efficient or permanent service unless permanent, efficient insulation is used.

More refrigerator manufacturers use Dry-Zero insulation than any other. In the specifications issue of Electric Refrigeration News, 16 of 33 makes are listed as using Dry-Zero.

This is because Dry-Zero does a better job than any other commercial insulant. Hence, it has become a powerful **sales aid** to dealers whose refrigerators have this demonstrable advantage.

- In plain words, Dry-Zero gives better insulation value than anything else that could be used. If thin walls are desirable, Dry-Zero will give greater efficiency than any other material. In fact, the thinner the wall the more necessity to use Dry-Zero to compensate for the lack of thickness of poorer insulating material.

Dry-Zero not only gives better efficiency when dry, but is least affected by the moisture that inevitably penetrates any cabinet wall. It will continue to give dependable insulation for the life of the cabinet.

- Any manufacturer who would take steps to hold his dealer organization will do well to insure its acceptance of his refrigerator by making an efficient, dependable job. Next to the compressor, no other one factor is so important as the use of Dry-Zero Insulation.

Dry-Zero engineers on request will courteously discuss facts and figures and submit proof that your refrigerator is more permanently efficient with Dry-Zero Insulation.

Dry-Zero Corporation, Merchandise Mart, Chicago, Illinois. Canadian Office, 677 Broadview Avenue, Toronto.

**THE MOST EFFICIENT COMMERCIAL INSULANT KNOWN** **DRY-ZERO**

LITTLE STORIES OF INTERESTING  
PEOPLE  
IN THE REFRIGERATION INDUSTRY

### Editorial Influence

It's awful hard to convince some persons that advertising doesn't—or shouldn't— influence the editorial columns of the News. It really works the other way. People sometimes forget that if a company is successful, if it is doing things which make news, it probably is an experienced and consistent advertiser.

Point of this little philosophical lead is that the Valve has been writing advertisements for some of the best customers of the News recently. Not intentionally, of course. But editorials we have written have been used as the bases for several advertisements recently.

Note, for instance, the Gibson advertisement in the Nov. 9 issue. Also the Dry-Zero advertisement in the current issue, as well as the one in the Nov. 2 issue. Maybe we've missed our calling.

Incidentally, President "Jeff" Johnston of Universal Cooler has been writing some first-rate editorials for us in his advertising.

He has started a unique series of modest advertisements in the News which reflect his ideas on the fundamentals of good business. We think it a highly original idea, and an effective one.

To refresh your memory, go back reread "There is always a tomorrow" (Oct. 12), "Present gain future loss" (Oct. 26), and "It never pays to crowd" (Nov. 9).

### National Advertising

Largely because a large number of influential electric refrigerator distributors and dealers today are objecting to expenditures made by their manufacturing companies for national advertising, budgets for the new year are going to include smaller (and in some cases, none) appropriations for space in national magazines.

"Stop national advertising," distributors have been telling their manufacturers, "and give us the money for direct-mail campaigns, local newspaper advertising, display material—or reduce prices."

At the suggestion of Walter J. Daily, advertising and sales promotion manager of General Electric's refrigeration department, we asked the opinion of several advertising agency executives on the value of national advertising. It was surprising—and possibly significant—that only a handful of the several dozen agencies to which we wrote thought it politic to commit themselves in this controversy.

One advertising man prefaced his remarks on the subject with a statement that "it is a time when the electric refrigerator manufacturers should continue to increase nationwide advertising," and added emphatically, "I am certain it is the same reply I would make if my agency received not a dollar of revenue on such advertising."

Another of his remarks: "If there ever was a time when the manufacturer of a reliable refrigerator with a background of public acceptance should advertise to hold and fortify his position, it certainly is now.

"The public is tired of cheap goods, and . . . it is certain that on this key-note of new public feeling, the manufacturer of a quality product can now turn effective advertising into sales at a price which leaves him a fair profit."

This man recalled how electric refrigeration went over with a rush in 1927, '28, '29, '30, and then said: "If we take it for granted that this same urgent desire will continue automatically, we are wrong."

The refrigeration industry is in competition with every other desirable commodity for the consumer's dollar, and there is no reason to believe that some other commodity may not crowd us into the background as to desirability in the purchaser's mind, unless we continue constantly to build up electric refrigerator consciousness.

"The only way to do it is through continued national advertising."

The fact that distributors and dealers are objecting to national advertising is nothing unusual, is this man's opinion. He says it happens in almost every business.

"And the wise manufacturer who seeks a nation-wide market," he maintains, "is familiar with this trade reaction, and does not let it stop him in his job of creating national prestige and desire for his product."

Another agency executive opined that it is perfectly natural that dealers and distributors should attempt to secure price reductions in these times, but added that no one obtains any benefit by a mere price reduction.

Rather, when prices are reduced by cutting or cancelling national advertising appropriations, the cost of making each sale is increased—and the dealer and distributor suffer.

"And after they have received the re-

# THE EXPANSION VALVE

By George F. Taubeneck

LITTLE STORIES OF INTERESTING IDEAS  
IN THE REFRIGERATION INDUSTRY

duction in price, the dealers and distributors are going to ask for advertising support," he said.

A third agency official had this to say:

"A refrigeration account must employ all accepted media. We would counsel the use of a backbone campaign in the national magazines, and would follow through with a comprehensive campaign in newspapers.

"From the standpoint of the local dealer, the very life's blood of his business depends upon local advertising. Properly employed, the local newspaper will produce for the dealer a standing in his community which will lift him out of the competitive class.

"Further, it enables him to make daily news-offerings which are comparable in interest to the editorial matter carried in the newspaper's regular columns."

by this remark: "For the usual metropolitan newspaper advertising on refrigerators, there is no justification in listing the dealers."

Another agency official commented on the plan by saying: "Such a list is usually a waste of space—unless a definite and timely offer is being made which requires that the dealer's location be known to the reader. In a majority of instances, the dealer listing occupies space which might better be given over to selling copy."

An agency president's opinion was: "Certainly no manufacturer feels like spending a great deal of money to establish the name of a concern that may possibly handle another line the following season."

Doubtless, the practice has its mechanical difficulties. In some cities, there

General context of the work is somewhat as follows:

After the invention of a product, there follows a period during which money is definitely lost (spent by the producer) through experimentation, discarding of inferior models, heavy selling expense, etc.

Next period is that in which the product has become acceptably perfected, and sales volume is beginning to increase rapidly enough to stop the downward progress, or rate, of losses.

Although costs have been somewhat lowered by increased volume, they are still quite high because of inadequate tooling, frequent refinements causing losses in inventory, and the fact that the factory and business are still usually in the hands of the inventor, his relatives, or friends.

Then capital enters—having been attracted by the product and its prospects for business success if properly promoted. There follows a period of increasing sales, a dawning consciousness of the public mind.

Characteristic of this period are: high list price, high discount, high selling cost, high cost of production, and intensive outside specialty selling by dealers. This is a time of moderate advertising.

Then there begins a flattening in the business' progress curve, because of the entry of many manufacturers and retailers into the same field.

Yet, there follows the specialty's "golden era" for it has gained acceptance, its price is still high, its discounts and profit returns are both high. It is a period of high sales and low manufacturing costs, but of tremendous advertising and selling costs per unit.

At this point, however, the field's stability is endangered, for practically all of the industry's products are of virtually the same quality, appearance, and price.

Then the "boys downtown" begin to feel that the time is ripe for them to cut the product's price, and secure a tremendously increased sales volume.

With assurances that large volumes will be absorbed, manufacturers willingly supply large retail outlets and mail-order houses with units at reduced costs, and vast numbers are sold on the basis of lower prices.

These "sales" ended, the price will no longer be effective as an attention-getter, and another cut will be made to bring in buyers, with advertising being used to help pull them to the price-cutters' salesrooms.

Shortly, another price cut is necessary to attract more buyers, ever-increasing numbers of retail outlets continue to take on the product, and prices descend to a point where there is only a small margin of profit left for manufacturer and retailer, without sufficient margin left to pay for advertising necessary to bring in new purchasers.

The manufacturer's small margin must be utilized to place in operation a wholesale organization to combat the companies which have entered the field when the price war opened.

Small dealer margin at this point causes many dealers to drop out of the picture, and new prospects have not been developed because all advertising has featured price instead of the unit's merits.

At this point comes the manufacturer's opportunity to re-create the product, give it new features, raise its list price, make it a new specialty, and thus discourage price competition.

He must give his product new birth, reorganize a field staff that will talk "quality" instead of "price," keep his product fresh, re-educate the public to the services offered by the product.

As long as he can do this, the re-organized business will be profitable and stable.

Thus saith Mr. Boulware.

### These Terhunes

E. A. Terhune, head of the Appliance Engineering Co. in Boston, isn't the only business wiz in his family. Young Terry, his pre-teen-age son, has inherited some of the paternal enterprising genius.

Terry is publishing a newspaper—and if you don't think that's enterprising, you must come and see us sometime!

Knowing the Valve would be interested in "Naborhood News" as he calls his sheet, he sent us a copy with this letter:

Dear Mr. Taubeneck:

I thought you would like to have one of my newspapers. I am editor, reporter, and everything in it. I had a partner but he quit. We had reporters but they don't work so hot. I have 35 customers at three cents a copy. It used to be five cents. The

adds cost 10 cents for  $\frac{1}{8}$  of a page,  $\frac{1}{4}$  for 15 cents, 25 cents for  $\frac{1}{2}$ , for 1 page 50 cents.

Yours truly

Terry Terhune,

President of Naborhood News.

P. S. I am chief editor of our school newspaper the "Stanley School News" and have two assistants.

"Naborhood News" consists of five closely packed, newsy, mimeographed sheets containing unusual feature Headline on the front page—something over 36 point—reads "Serious Sicknes

Items under this spread over on page 2. Some of them are:

"Mr. Whiten is very sick and he is in the hospital."

"Mrs. Whiten is very sick she has been sick for quite a while."

"Jennie Smith was running and fell down with a bean blower. The doctor came but it was not very serious."

"We are very sorry that so many people are sick."

"Mrs. Cloran's cat died. It was taken away by the Animal Rescue League."

Editor Terhune covers his territory down to the last inch. Other items of interest to the neighborhood include these:

"Frank Lane, Terry Terhune, and John Homan are going to dancing school. John Homan has gone last year."

"The Harris' are in New York."

"Mrs. Ross and a Friend have started a kindergarten. They have 11 pupils."

Also on page 2 is outlined the gettin editorial philosophy: "If even one of our customers will try to get on piece of news we will have twice as much as we have now." How true, how sad and if only!

Knowing that Mr. Average Reader turns quickly to the "funny page" of a newspaper, Terry devotes his third page to the nefarious "Adventures of Jim Jim."

The drawings are simple, graphic and clever—and adequate, down to the astonishing yet terse speeches. The lad has caught up with Jim and we find him in jail. After several harrowing moments, the story is "to be continued" this particular instalment ending with a midnight marauder breaks into our hero's cell and "Jim socked him on the jaw."

The editorial is placed after the "funnies." It outlines a real problem.

"There have been many fights over children running over property. I think they shouldn't run over property but they can't play on the park all the time. We play on Aspen Rd. and somebody comes out and tells us to go on Ocean View Rd. We go there and they tell us to go on Aspen Rd." (This ends, not with a period, but with an exasperated dash.)

A sport feature, called "One Minute to Play," holds reader attention from the first sentence, "On the kickoff the opposing team made a touchdown. However, all turns out happily, for in the last minute Tom ties the score." Then he tried for the point and made it his team had won. The score 6 to 7.

Five variously sized advertisements indicate a sound financial basis.

It's our prognostication that in a few years somebody's going to have to move over on the Journalistic Immortals' Bench to make room for young Terry. He seems to have What It Takes.

### Petrie & Crockett

A few days ago the office calm of A. M. (Bert) Taylor, Leonard merchandising director, was shattered by the sudden and bursting entrance of T. L. (Carload) Petrie, sales manager for Leonard. Mr. Petrie had just discovered that he had never received a carload order from a certain distributor in a Western city.

Taylor was almost as shocked as Petrie. Whereupon the latter began tossing papers into his brief-case and a couple of spare collars and a toothbrush into his grip, preparatory to a flying trip to the city in question.

Before he had completed the packing operation, an order for a carload came in from his contemplated destination.

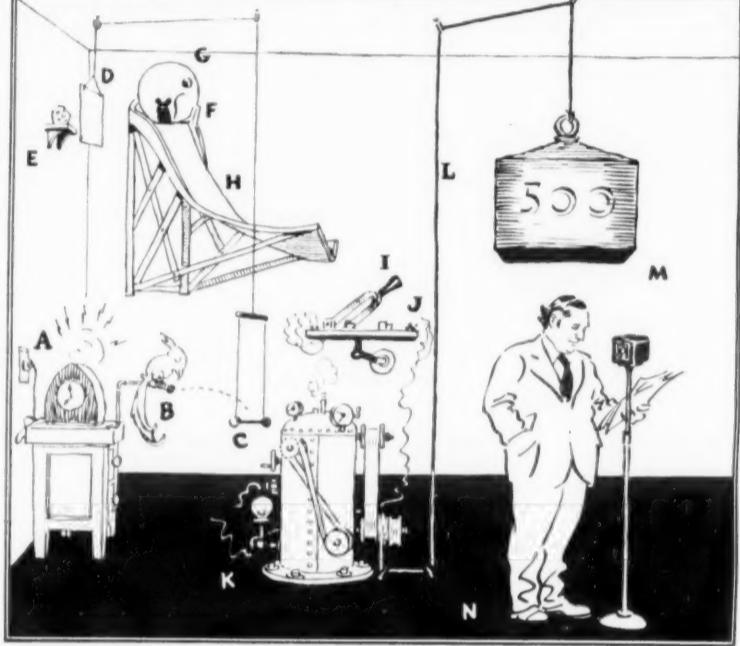
Elated, Mr. Petrie dashed back into Taylor's office, waving the order.

"That," quoth Bert Taylor, "reminds me of the story of Davy Crockett and the coon."

It seems that the coon, high up in the sheltering branches of a tree, spotted Davy (one of the best shots of all time) and his smooth-bore rifle, known everywhere as "Old Betsy."

Before Davy could draw a bead on him, the coon called out: "Don't shoot, Dave! I'll come down!"

### Heywood Broun 'Squelching Machine'



In order to limit commercial radio announcements to two minutes, a cartoonist devised this set-up for Heywood Broun, master of ceremonies on General Electric's home circle programs. The method of operation is: Electric alarm clock (A) signals the two minutes, arousing sleeping Balkan Hopbird (B) who jumps on trapeze (C) pulling up shade (D) exposing cheese (E) to famished gaze of mouse (F) who leaps for his dinner releasing bowling ball (G) which rolls down runway (H) falling on switch (I) closing connection (J) thus starting the Carpathian winch (K) which releases 500-pound weight (M) which falls on Mr. Heywood Broun (N). We are indebted to G. E. Hotpoint organization for this idea.

From still another source came the point that retailers are too often inclined to forget the value of advertising when business hits a slump.

Here is the statement:

"Continued advertising increases sales, makes economical mass production possible, and makes it practical to give much more for considerably less money.

"It's a great temptation sometimes to stop advertising for awhile. Some feel the temptation when business is good, some feel it when business is bad, and some are tempted all the time.

"Advertising is effective when it is hammer, hammer, hammer all the time. You shouldn't exert all your strength for one big smash, and you shouldn't pound for awhile and then loaf. You have to continue hitting as hard as your money will allow you."

• • •

### Local Identification

Another subject being debated to some extent today by advertising managers concerns the advisability of including local dealers' names in metropolitan or key city newspaper advertisements.

Leonard Refrigerator Co. is at present following the practice of including names of local dealers in advertisements published in Hearst's American Weekly—the name of dealers in each city which has a Hearst paper being inserted in the papers distributed in that territory, thus achieving local identification in national advertising.

These dealer-name ads are also effective in that they tie a locally known and accepted merchant's name to a product. Such identification, of course, helps create confidence in the product, and helps make for familiarity with it.

• • •

### Price Competition

Pursuant to discussions in ELECTRIC REFRIGERATION NEWS of price reductions, we were sent an interesting article which, its sponsors claim, pointed out last year just what might happen this year in the refrigeration industry—and called the turn.

The article was forwarded by M. Glen Miller and Donald J. Powers of the M. Glen Miller advertising agency, and Harvey B. Lindsay, president of Dry Zero Corp. It is the work of L. R. Boulware, general sales manager of the Syracuse Washing Machine Corp.

Under the title, "How Price Competition Destroys a Specialty Market," the article was printed in the March 21, 1931, issue of Sales Management.

When first published, there accompanied the article a chart showing "sales stages" of the average specialty product.

# Do You Know the Facts?

## —about your competition?

The new edition of the Refrigeration Directory and Market Data Book gives detailed specifications for 354 models of household electric refrigerators made by 48 different companies.

## —about monthly fluctuations in the volume of sales?

Complete statistics for each month of this year showing sales and stocks of household and commercial equipment of the group of companies representing 80 per cent of the industry's total business are tabulated in the October Supplement which is bound in with the new paper-back, one-dollar edition of the Directory.

## —about the progress of air conditioning?

The six recognized functions of complete air conditioning are outlined, the present status of the business is stated in definite terms and a complete list of the manufacturers of the various types of equipment will be found in the new book now on sale.

## —about new trends in methods of distribution?

A clear explanation of the important changes in the sales policies of leading manufacturers is given in the 120-page Supplement which has been added to the 1932 Refrigeration Directory and Market Data Book.

## —about the growing importance of companion merchandise?

The need for additional lines of appliances in the store of the specialty selling dealer and the current trend of this development is explained in the review of the problems and opportunities which confront the electric refrigeration distributor and dealer.

## —about the extent of the market in your town?

The number of wired homes in every county and in every town of 2,500 population (or more) is given in the Refrigeration Directory and Market Data Book.

## 590 Pages of Helpful Information

This new edition is only \$1.00 per copy postpaid in the United States.  
Add 50 cents for extra postage to all other countries.

Please note that this edition has paper covers and side wire stitching instead of being flat sewed and cloth bound like the previous higher-priced edition.

**Special Combination Offer:** Only 50 CENTS per copy when ordered with a new or renewal subscription to Electric Refrigeration News.

← GET YOUR COPY TODAY. USE THIS COUPON

Business News Publishing Co.,  
550 Maccabees Bldg., Detroit, Mich.

Enclosed is \$1.00 for which please send copy of the 1932 Refrigeration Directory and Market Data Book including NEW SUPPLEMENT.

Enclosed is \$3.50. Please enter  new  renewal subscription to Electric Refrigeration News and send the 1932 Refrigeration Directory and Market Data Book including NEW SUPPLEMENT.

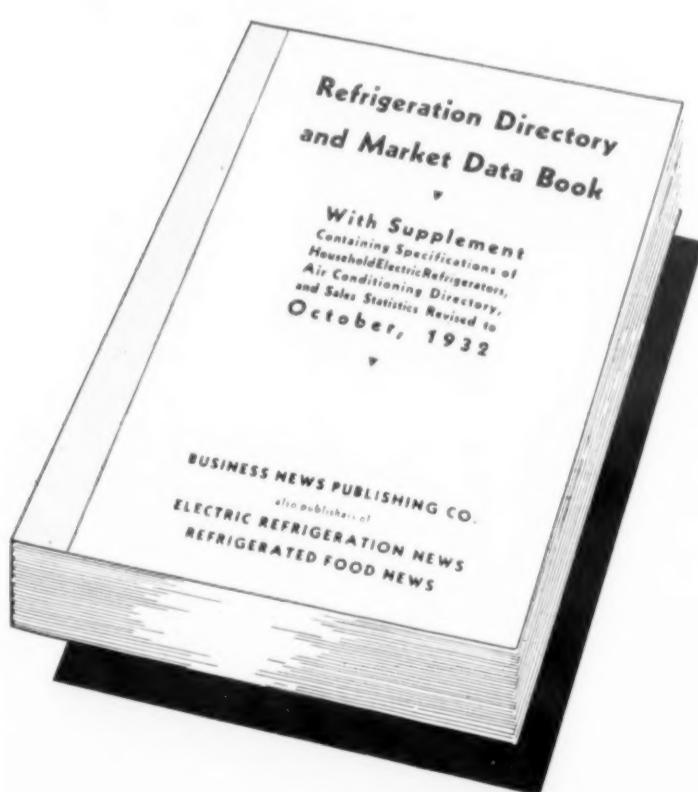
Enclosed is \$4.00. Please enter  new  renewal subscription to Electric Refrigeration News (weekly) and  new  renewal subscription to Refrigerated Food News (monthly). Also send the 1932 Refrigeration Directory and Market Data Book including NEW SUPPLEMENT.

Name \_\_\_\_\_

Address \_\_\_\_\_

City and State \_\_\_\_\_

Above rates for United States only. Add 50 cents for foreign postage.



## How Los Angeles Firms Compensate Salesmen

### Survey By Sales Managers Covers Agreements With Salesmen

**Editor's Note:** Branch managers, distributors, dealers, public utility merchandise managers, and department store appliance managers who are drawing up their plans for next year should find the following survey of the vexing question of salesmen's compensation timely and pertinent.

This study was made by the compensation committee of the Sales Managers Bureau, Los Angeles Chamber of Commerce; and was drawn up after a study of questionnaires mailed to members, followed by a series of meetings of the committee. Individuals directly responsible for the report include:

J. H. Jamison, chairman, Westinghouse Electric & Mfg. Co.

Paul Brock, Schwabacher-Frey Co.

Colin D. Care, Eng-Skell Co.

F. L. Hockensmith, Pacific-Goodrich Rubber Co.

Ed. Norton, Ray Thomas, Inc.

H. C. Rice, Southern California Edison Co.

J. F. Bone, secretary, Sales Managers Bureau, Domestic Trade Department, Los Angeles Chamber of Commerce.

#### Elements, Purposes of Compensation Plan

The elimination of turnover in the personnel of the sales force is one of the most effective methods of reducing the cost of doing business. The salesman does not make a profit for his house until such time as he has completed his training period and has sold enough merchandise to enable the house to recover money expended for training purposes.

The loss and replacement of salesmen is costly both in dollars and cents as well as in the fact that this changing process is constantly retarding aggressive effort in some part of the market.

It is a drag on the highly geared selling machine. Sales force turnover cannot be entirely eliminated, but it can be controlled and in cases where it is brought under control, the result is a saving in actual cash and prestige.

It is apparent then that the sales manager who can remove the principal cause for the loss of salesmen is in a much better position to turn his time to sales promotion rather than to be occupied by the problem of keeping his ranks filled.

Salesmen work for necessities and comforts as symbolized by wages. Wages are the compensation for hard work, loyalty, and ingenuity as applied to the job at hand.

The salesman measures and evaluates his job by the opportunities it offers for him to increase his earnings. If he is satisfied that he is getting a fair deal from the house, he works at the job.

If it develops that the compensation plan set up by the firm works to his disadvantage, he quits.

In this report which is edited for sales executives, it will not be necessary to spend time with an examination of the essentials of a compensation plan. Suffice it to say that a plan of compensation for salesmen should:

1. Enable the salesman to maintain a standard of living compatible with the people he must approach.

2. Have the support of salesmen.

3. Be clear enough and simple enough to inspire the salesman's confidence and

knowledge that he will receive fair treatment.

4. Provide an incentive to the salesman for doing more business.

5. Protect customers to the extent that salesmen will guard their chances for future orders and refrain from overstocking the buyer.

6. Make some allowance whereby the salesman's selling expenses do not absorb the greater part of his earnings.

7. It must be made on a basis equitable to the house as well as the salesmen. The firm is not operated solely for the benefit of the sales force.

8. It must be flexible enough to enable the salesman to increase his earnings as he becomes more efficient.

9. The essence of the compensation plan must be to incite the salesman to sell goods, earn the good-will of the customers, and return a profit to the firm as a result of his efforts, at the same time enabling him to increase his earnings as he becomes more proficient in his work.

#### The Working Arrangement

In the field of retailing and in some lines of direct selling it is not the custom to draw up regular contracts with salesmen.

The policy of the firm is usually well defined as regards compensation, and is concrete enough so that there is little chance for confusion or misunderstanding regarding the rights of either the salesman or the house.

The verbal agreement, however, is not desirable nor is it practical where the firm desires a hold on the salesmen or wishes to make them feel that they are a vital part of the organization.

For this reason, most manufacturers and wholesalers prefer written agreements with salesmen. This lessens the chance for misunderstanding and permits the closing of an engagement without entanglements should it become necessary to discontinue employment.

The Dartnell Corp. of Chicago has made an examination of agreements between salesmen and their employers and has found the following contract clauses in general use:

1. Daily Report Clause—This section generally states the frequency with which reports must be made, pointing out that failure to do so constitutes absence from duty with resulting loss of salary.

2. Collection Clause—The Carey Salt Co. includes in its contract what is expected of a salesman in the way of cooperation with the credit department. Clauses of this kind should fully cover the need of handling collection money, placating dissatisfied customers, etc.

3. Payment of Commissions—The time of payment of commissions should be specified and matters such as bad debts, allowances, rebates to customers, cancellations, returned goods, discounts, etc., should be considered. The clause should definitely state whether commissions

are payable upon receipt of orders, delivery, or after the collection of the account.

4. Conditions of Termination—The contract should state on what conditions an agreement can terminate and what notice will be required.

5. Modification of Contract—A contract may be modified or rescinded by consent of both parties or provided a sufficient consideration moves between both parties. In the event that the company wishes to reserve the right to make all alterations on its own initiative, this should be stated in the contract.

6. Renewal or Continuance of Employment—The law holds that when a salesman continues in his employment after the expiration of the period of his contract, the presumption is that the employment is continued on the terms of the original contract. The termination clause should handle this matter.

7. Mergers or Other Changes—When the house makes certain changes in management, the agreement or contract should be renewed. Previous arrangements are automatically cancelled.

8. Bonus Arrangement—Most concerns have their bonus plans in writing and draw them up with the aid of an attorney. However, it is not absolutely necessary to include the bonus arrangement in the salesman's contract. The advantage, of course, over the oral agreement is in the definite terms of the arrangement.

9. Forfeitures by Salesmen Who Quit—A contract may cover forfeitures by salesmen leaving employ. This clause is generally stated as follows: "If, for any reason, salesman leaves the employ of the company, only one-half of the specified commission shall be paid on any accounts which have not been delivered."

#### Forfeiture Clause

"Full commission will be paid only on sales as they actually show on the ledger at the time the salesman leaves the A.B.C. Co." The safest method of handling a forfeiture clause is to have it constructed by an attorney. There is perhaps more confusion over this point with resulting court procedure than in any phase of salesmen's contracts.

Naturally, the legal requirements of the contract such as eligibility of the contracting parties, legal terminology, etc., apply to drawing up a salesman's agreement or contract.

In cases where the salesman purchases his merchandise from the firm for resale, either to consumers or retailers, agreements are not essential.

In some instances, he may be given a restricted territory by contract whereby both parties make concessions; the salesman by agreeing to purchase a minimum amount of merchandise in return for a grant of exclusive selling rights in the defined territory.

#### Forms of Compensation

There are innumerable varieties and types of compensation plans, varying according to the locality, type of business and peculiarities of the marketing conditions, and adapted to meet the needs at hand.

Generally speaking, however, the forms of compensation fall into the 11 major divisions listed below:

1. Straight Commissions—The straight commission may be based on either a percentage of gross sales, or a percentage of profits.

2. The Straight Salary Plan—Whereby the salesman receives a stipulated salary monthly irrespective of the variations in volume of business.

3. Salary Plus Commission—Generally under this plan a moderate salary is paid, with the commission, providing an incentive and opportunity for the salesman to increase his income.

4. Salary Combined with Bonus—Under this plan the straight salary is paid with a bonus to salesmen paid at the end of a six months or yearly period, which is generally a dividend of earnings of the firm, apportioned among the salesmen either on the basis of equal division or a variation according to the total amount of business obtained.

The bonus is generally paid to the salesmen upon the attainment of a set quota as against the bonus which takes the form of a payment of a percentage on all sales regardless of a set quota.

5. Commission Combined with Bonus—In this plan the commission is substituted for the salary with the payment of a bonus for the attainment of a set quota of sales at the end of a period of time.

6. Drawing Account, Based on Gross Sales, Profits, or Bonus Earnings—The drawing account is in reality a banking procedure. The firm pays the salesmen a stated amount which in turn is deducted from his commission as determined by his percentage of gross sales, gross profits, or his bonus earnings.

Companies have advanced money to salesmen chargeable against commission, believing that such debts held legally, where in reality such was not the case, unless agreed to by contract. Particular care should be exercised in acting within legal limits under this plan. The advantage of the drawing account to the salesman is generally in furnishing him with money for living expenses during slack seasons.

7. Point System—This system is based on the plan of allowing points for tasks. These tasks may be calls, orders booked, demonstrations made, collections, merchandising programs explained, adjustments, etc.

Naturally, the greatest award of points would be for actual sales or orders booked. The award of points is graded according to the relative importance of the various tasks performed by the salesman. Each point has a monetary value with the result that at the end of the month, the salesman's points are translated into terms of salary and his check paid out for the total valuation.

8. Salary, Expense, and Commission—In this plan salary and expense are deducted yearly from commissions, as determined by a commission rate. If there is an excess, it is paid to the salesman.

9. Group Commission Plan—In this plan, the merchandise is divided into groups, each paying a different commission. This enables the salesman to evaluate his time and put the most effort on high profit items.

10. Salary and Percentage of Saving Plan—In this plan a percentage figure is set for a territory. By increasing sales or decreasing expenses, the salesman can increase his earnings.

11. Profit Sharing Plan—Under this system a general rate of profit for all products or specific items is set and the salesman draws his compensation from a percentage of this margin, the house taking the rest.

#### The Automobile Allowance

In the Los Angeles immediate area there is little doubt but what the salesman traveling by automobile makes more calls as well as a higher number of sales than the man traveling otherwise. Good roads and accommodations render the automobile a vital sales tool.

In some Nevada, Arizona, and New Mexico territories railroad transportation is advisable, whereas the Pacific Coast states are generally covered by automobile. A questionnaire sent to 50 Eastern manufacturers recently disclosed the fact that since motorizing their sales forces sales volume had increased one third and total sales were made at a lower percentage of cost.

The fact that the automobile may be used throughout the year in the Southwest makes it a necessity in country sales work.

In some types of selling and in some city sales work it would be decidedly unwise investment for the firm to buy automobiles for the sales force. In some types of city sales work, the firm does not even make an automobile allowance.

#### Factors To Be Considered

The employer in furnishing automobiles or encouraging the men to use their own cars should consider the following factors:

1. Whether the possible market for the product is widely scattered one or composed of customers in close proximity.

2. The local conditions of the territory such as climate, roads, and operating costs as determined by gas and oil.

3. Characteristics of the salesman, and whether or not he is hurried by the automobile with resulting loss of effort and time spent in interviews.

4. Type of automobile involved.

Liability insurance is the most important type of insurance, with fire and theft next. Theft rate reductions are usually granted where the trade mark appears on the car.

As regards the actual automobile allowance, the general experience has been that the expense account has increased as the automobile has replaced train travel. However, the general increase in sales has more than offset this factor.

Some of the following methods of automobile allowance and purchase have been used in cases where the salesman owns the car:

1. Loans on personal notes of salesmen with reasonable interest or no interest rate but with mortgage on car.

2. Salesmen pay one-third or one-fourth cash as down payment with house guarantee of balance.

3. House advances price of specified make of car for purchase and deducts from expense allowance.

4. House expects salesmen to buy car out of flat expense allowance.

5. House allows mileage rate of 4 cents to 6 cents per mile for country calls and 5 cents to 8 cents for city calls.

6. No mileage rate; salesmen expected to operate car out of salary or commission.

7. House allows flat sum ranging from \$10 to \$15 per week for operating car.

In cases where the house owns the car, the usual procedure is to furnish gasoline and oil scrip books and pay other bills on presentation of receipts.

#### Salesmen's Expense Accounts

During the past three years, the number of firms who give their men an unlimited expense allowance has decreased almost to the vanishing point. The general feeling now is that the salesman does not necessarily have to stop at the first-class hotel, but rather at the comfortable "commercial houses" that rank

between the first and third class hotels.

While it does not pay to be lavish with salesmen, it is necessary for them to realize that the expense part of their activities is important and subject to close scrutiny.

Salesmen should be furnished with a statement of those items that constitute legitimate and allowable expense. This eliminates arguments and dissatisfaction and furnishes a guide to the men.

The sales manager who is faced with the problem of reducing expenses will generally find that the bulk of the expense items constitute what is known as overhead, or expense that goes on regardless of whether the salesman makes five or fifty calls during the day.

His problem then is to bring the balance of expense and sales into a more favorable relative position. The more profitable and difficult method of doing this is to require a greater number of calls per day from salesmen, thus reducing the ratio of expense to calls.

The average salesman is negligent in regards filling out reports. Because of this characteristic it is best to make the daily expense report as simple and automatic as possible. It is advisable in the general run of cases to combine the expense report with the daily report.

One of the most effective plans for reducing and checking expenses is the following, used by a Los Angeles firm. The salesman reports daily on sales and calls. On his report sheet he also records his expenses.

In turn, he receives at the end of the week a report showing his sales volume for the week, his expenses, and the gross profit to the house on his activities for the week. This gives the man an opportunity to check his expenses and increase his rate of profit to the house either by increasing sales or reducing expenses.

#### Check Expenses

It is advisable to check expenses monthly or yearly in order that the operating cost per thousand dollars for each man may be determined. In this way discrepancies that make it possible for the salesman with a high volume to run up his expense account can be brought to light.

The competitive spirit that makes the sales contest so popular can be brought into play on the expense account by this method of determining

(Concluded on Page 12, Column 1)

## DEALERS! ASSEMBLERS!

A chance for you to buy compressors or complete units from the manufacturer at an interesting price.

**KING KOLD CORP.**  
2300 S. Western Ave.  
CHICAGO

NEW, LOWER PRICES ON McCORD COMMERCIAL EVAPORATORS

WRITE FOR NEW McCORD CATALOG GIVING LOWER PRICES ON McCORD EVAPORATORS. INCREASED DEMAND AND LOWER METAL COSTS MAKE POSSIBLE A SUBSTANTIAL PRICE REDUCTION. THE SAME SATISFACTORY McCORD ALL-COPPER COIL WITH FLEXIBILITY OF ARRANGEMENT TO MEET HEAT, LOAD AND SPACE REQUIREMENTS.

**McCORD RADIATOR & MFG. CO.**  
DETROIT, MICH.

**Balsam-Wool Sealed Slabs  
ODORLESS SANITARY**  
Completely satisfactory Refrigerator Insulation

WOOD CONVERSION COMPANY  
Industrial Sales Offices:  
CHICAGO, 360 N. MICHIGAN AVE.  
New York, 3107 Chanin Bldg.  
Detroit, 320 Stephenson Bldg.



Model 1000B, 1 1/2" bore and stroke. For use with 1/2, 3/4 and 1 H.P. Condensing Units, for Sulphur Dioxide or Methyl Chloride.

The perfect balance, compactness

## BUYER'S GUIDE

*Manufacturers Specializing in Service  
to the Refrigeration Industry*

SPECIAL ADVERTISING RATE (this column only)—\$12.00 per space. Payment is required monthly in advance to obtain this special low rate. Minimum Contract for this column—13 insertions in consecutive issues. All advertisements set in uniform style of type with standard border. Halftone engravings of 100-line screen, either outline or square finish. No reverse cuts or heavy black effects. No charge for composition.



### The PEERLESS THERMAL EXPANSION VALVE

(Pat. No. 1870090, Others Pending)

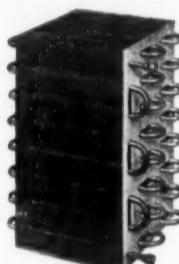
For use with Methyl Chloride and Sulphur Dioxide

The perfect thermostatic valve. The control always resides in the bulb due to the patented Peerless warming method. The PEERLESS will eliminate your expansion valve troubles.

List Price, \$13.50. Write for bulletin.

PEERLESS ICE MACHINE CO., 515 W. 35th St., Chicago, Ill.

### A NEW FIN COIL by PEERLESS



Wedge-locked and edge-locked aluminum fins on tinned copper tubing for methyl chloride, sulphur dioxide, F-12, etc.—aluminum tubing for ammonia.

Absolute Metal to Metal Contact.

A Superior Coil in which Soldered Return Bends have been eliminated.

Priced to meet 1932 conditions.

Write—Wire for Catalog.

PEERLESS ICE MACHINE CO., 515 W. 35th St., Chicago, Ill.



### Hoosier Standardized Parts

HOOSIER LAMP & STAMPING COMPANY, EVANSVILLE, IND.

Completely assembled and individually bagged. Ready for shipment in your refrigerator. Write for complete list of standard sizes and prices.

We will make it for you!

We are perfectly equipped for quantity production of light or heavy mechanical parts or units. Precision manufacture and rapid delivery. Unusually moderate charges.

Indian Motocycle Co.  
Springfield, Massachusetts



### REFRIGERATION SUPPLIES

We carry a complete stock of

#### EVERYTHING IN REFRIGERATION

including a full line of

#### RUBBER PARTS FOR ICE CREAM CABINETS

Frost Collars, Brine Hole Stoppers, Lid Rings and Knobs

#### MELCHIOR, ARMSTRONG, DESSAU CO.

116 Broad St., New York

523 Arch St., Philadelphia

### Do You Want Something Else to Sell?

Home owners are increasingly conscious of the advantages of clean, fresh air in kitchen, bath and other rooms of the house. There is a big market for MOTOVENT, the electric home ventilator. Fits any window—easy to install—beautiful in appearance.

Models to retail at 29.50 to 49.50. Attractive margins to distributors and dealers. Write for full details.

M O T O V E N T  
FRED'K N. ROSS, Inc.  
1010 Beaubien St., Detroit

### YOUR ADVERTISEMENT

in this Buyer's Guide Column will be seen by distributors, dealers and refrigerator manufacturers throughout the entire world.

#### SPECIAL LOW RATES

make it easy to keep industry buyers constantly informed of your products and service.

Electric Refrigeration News  
550 Maccabees Bldg.  
Detroit, Mich.

### REQUESTS FOR INFORMATION

Please refer to the 1932 Refrigeration Directory and Market Data Book for a complete list of all manufacturers of refrigeration equipment, parts, materials, supplies, and accessories; also for all available statistical data on sales of refrigeration equipment, distribution methods, etc.

New edition with October Supplement (paper covers) is now available at \$1.00 per copy.

Advertisers will be given preference in publishing answers to requests for buyer's guide service, but a complete list of all known suppliers will be mailed if stamped, self-addressed envelope is enclosed with inquiry.

Readers who can be of assistance in furnishing correct answers to inquiries, or who can supply additional information, are invited to address Electric Refrigeration News, mentioning query number.

**Defunct Companies, and 1932 Sales**  
Query No. 984—"Have you a list of all companies that have entered the field of electric refrigerator manufacture since the start of electric refrigeration, and those that have since gone out of business?"

"Also, just as soon as definite information is available concerning the 1932 refrigerator sales and the 1933 potential market, will you kindly send it on to us?"

**Answer**—You will find a considerable number of manufacturers that have gone out of business in the Trade Name section of the REFRIGERATION DIRECTORY and MARKET DATA BOOK.

We cannot furnish an official and authentic list of all companies that have entered the field and later passed out. In fact, it is very difficult to tell just when a particular operation has ceased. Sometimes they continue for years in a small way, and frequently supposedly defunct companies come back to life again.

We have had numerous requests for this information, no doubt suggested by lists of orphan automobiles. The situation is not entirely comparable because of the fact that a company can go into the electric refrigeration business on a very small scale and not become noticed in an official way.

For example, a refrigeration man from Los Angeles recently made the statement that "conditions in that city are showing signs of improvement, and a number of small manufacturers have passed out of the picture." He said, "At the present time there are only 16 left." In other words, it appears that there are at least a dozen small companies in Los Angeles of which we have never heard.

Answering your second question, an estimate of household electric refrigerator sales for the first nine months of 1932 appeared in the Nov. 2 issue of ELECTRIC REFRIGERATION NEWS and is also published along with other new data in the new edition of the REFRIGERATION DIRECTORY.

**Compressor Manufacturers Near New York City**

Query No. 985 (Manufacturer)—"We desire to get in touch with manufacturers of 1/6-hp. condensing units, in or near New York City."

**Answer**—Brunner Mfg. Co., Utica, N.Y.; Carrier Engineering Corp., 850 Frelinghuysen Ave., Newark; Deissler Machine Co., Greenville, Pa.; and Kulair Corp., Philadelphia.

#### Kerosene-Operated Refrigerators

Query No. 986—"Bohn Refrigerator Co. has referred us to you for information on manufacturers of mechanical refrigerators operated by a kerosene lamp."

**Answer**—Two kerosene-operated refrigerators are now being sold in this country. The "Superfex" is made and sold by Perfection Stove Co., 7609 Platt Ave., Cleveland; the second is built on contract by a large refrigerator manufacturer and marketed by Montgomery Ward Co., Chicago. The "Electrolux" of Electrolux Refrigerator Sales, Inc., Evansville, Ind., can be adapted to kerosene operating by means of a special burner.

#### Air-Conditioning Manufacturers

Query No. 987 (Distributor, Brazil)—"Due to rapid developments in the air-conditioning field, we feel that there must be a number of new machines that were not listed in the 1932 REFRIGERATION DIRECTORY and MARKET DATA BOOK. Kindly advise us of any new manufacturers of air-cooling equipment in both electric and ice types. We would also appreciate your advising us as to the probably date at which the 1933 DIRECTORY will be issued."

**Answer**—A revised edition of the DIRECTORY has just come off the press. This edition contains a classification of all air-conditioning manufacturers known to have entered the field by October of this year.

#### Refrigerator Production by Companies

Query No. 988—"We would like to know, if possible, the number of electric refrigerators sold by the individual companies during 1931."

**Answer**—Statistics are not available by individual companies. For data on the sales of the entire industry through September, please refer to the revised edition of the REFRIGERATION DIRECTORY, which is being distributed this week at a cost of \$1 per copy. (590 pages, paper

### Nema Distribution By States

#### THE CONDENSER

PAYMENT IN ADVANCE is required for advertising in this column. The following rates apply:

POSITIONS WANTED—Fifty words or less, one insertion \$2.00, additional words four cents each. Three insertions \$5.00, additional words ten cents each. ALL OTHER CLASSIFICATIONS—Fifty words or less, one insertion \$3.00, additional words six cents each. Three insertions \$8.00, additional words sixteen cents each.

REPLIES to advertisements with box numbers should be addressed to the box number in care of Electric Refrigeration News, 550 Maccabees Building, Detroit, Mich.

#### POSITIONS WANTED

ENGINEER—14 years active in domestic and commercial refrigeration work. Experience includes thorough knowledge of thermodynamics and mechanics of gases, design of units, compressors, boilers and accessories (expansion valves, floats, thermostats, etc.), engineering management, laboratory, production and service work. Position desired with unit or parts manufacturer. References. Box 511.

#### FRANCHISE OPEN

REFRIGERATOR DEALERS can cash in on their contacts and keep their salesmen busy in winter by selling stokers. We have the highest developed, fastest selling, lowest priced automatic stoker on the market... backed by 69 years heating equipment experience. Our complete manuals and data make selling easy. Write for territory available. Freeman Stoker & Engineering Co., 105 E. 63rd St., Chicago, Ill.

#### FRANCHISE WANTED

AGENCY FOR SPAIN. Important electrical firm established over 20 years, operating in the whole of Spain and with 6 years experience in refrigeration, wishes to represent first class manufacturer of refrigerating machinery. SO<sub>2</sub> preferred. Apply Box 523.

#### EQUIPMENT FOR SALE

REFRIGERATION EQUIPMENT, HIGH SIDES AND COMPRESSORS. Complete high sides for household refrigeration \$24.50. We can furnish you with piston or well known rotary type either for sulphur or methyl, completely assembled; motor, compressor and condenser on metal base. The component parts of these units are manufactured in nationally known plants and assembled by us. We issue no catalogue, but will gladly furnish any information desired. Electric Refrigeration Sales, 6228 Cass Ave., Detroit, Mich.

#### Trained Men Available

When in need of practical, trained shop mechanics, sales, installation or service men, patronize this PLACEMENT BUREAU. We have competent, trained graduates available in every locality, to meet your requirements. With or without experience. No charge to the men or to you. Write, phone or wire.

#### Utilities Engineering Institute

Placement Division  
Dept. 9112 404 No. Wells St., Chicago

rapidly. Scarcely any two companies operate on the same basis, and there is no standardized cost accounting in the industry. Distribution of sales costs as set up in ideal budgets has little relation to actual conditions.

### COMBINATION SUBSCRIPTION RATES

NO.	PUBLICATIONS	How to save money on your subscription order	
		YOU PAY	YOU SAVE
1	Electric Refrigeration News (1 Year) and Refrigeration Directory and Market Data Book*	\$3.50	\$.50
2	Electric Refrigeration News (2 Years) and Refrigeration Directory and Market Data Book*	\$5.50	\$1.50
3	Refrigerated Food News (1 Year) and Refrigeration Directory and Market Data Book*	\$1.50	\$.50
4	Refrigerated Food News (1 Year) and Electric Refrigeration News (1 Year)	\$3.50	\$.50
5	Refrigeration Directory and Market Data Book* and Electric Refrigeration News (1 Year)	\$4.00	\$1.00
6	Refrigeration Directory and Market Data Book* and Electric Refrigeration News (17 Weeks)	\$1.50	\$.50

Order by number. Use coupon below. These rates for U. S. only.

\*New edition, with paper cover, including Supplement.

### Group Order Rates for U. S. and Foreign Countries

PUBLICATIONS	NUMBER	UNITED STATES*		CANADA†/ALL OTHER COUNTRIES
		UNITED STATES*	CANADA†/ALL OTHER COUNTRIES	CANADA†/ALL OTHER COUNTRIES
Electric Refrigeration News	1 subscription	\$3.00	\$4.00	\$4.00 These foreign rates will be increased 3.75 on or before Jan. 1, 1933.
	5 or more, each	2.75	5.75	5.75
	10 or more, each	2.50	5.50	5.50
	20 or more, each	2.25	5.25	5.25
	50 or more, each	2.00	5.00	5.00
Refrigerated Food News	1 subscription	\$1.00	\$2.00	\$1.50 These foreign rates will be increased 1.45 on or before Jan. 1, 1933.
	5 or more, each	.95	1.95	1.95
	10 or more, each	.90	1.90	1.90
	20 or more, each	.85	1.85	1.85
	50 or more, each	.80	1.80	1.80
BOTH PAPERS	1 subscription	\$3.50	\$7.00	\$5.00 These foreign rates will be increased 4.75 on or before Jan. 1, 1933.
	5 or more, each	3.25	6.75	6.75
	10 or more, each	3.00	6.50	6.50
	20 or more, each	2.75	6.25	6.25
	50 or more, each	2.50	6.00	6.00

\*U. S. and Possessions and Pan-American Postal Union Countries.

†High rates for Canada are due to Canadian tariff of 5¢ per copy.

### SUBSCRIPTION ORDER

BUSINESS NEWS PUBLISHING CO., 550 Maccabees Bldg., Detroit, Mich.

## How Los Angeles Firms Compensate Salesmen

### RECENT TRENDS IN PAYING SALESMEN TOLD BY SURVEY

(Concluded from Page 10, Column 5)  
each man's sales cost per thousand dollars of orders booked.

Needless to say, expenses have been reduced during the past two years and in most cases a general downward revision went into effect after January, 1932. The most general cuts have been in automobile allowance. Entertainment has been cut entirely by a great many firms or reduced drastically.

#### The Trend in Compensation Plans

Present business conditions have produced a trend away from salary plans of compensation and flat expense accounts to incentive plans. The magazine "Sales Management" recently conducted a survey among 475 companies in order to determine the present trend in compensation.

Among the conclusions drawn from the survey were the following:

1. While there is every indication that the need for compensation adjustment has been felt, the changes are being made with some thought as to the probable effect when sales begin to climb.

2. Drawing accounts have been cut or eliminated because of the fact that indebtedness of salesmen to the company has increased due to the piling up of advances against unearned commissions.

3. The compensation plan is receiving careful attention because of its bearing on the morale and fighting spirit of the sales force.

4. The firms who have had their men on a profit sharing basis appear to be having less trouble than those operating under other systems.

5. Salesmen on salaries have been cut from 10 per cent to 20 per cent.

6. The changes in compensation plans put into effect by many companies have weeded out the low-volume producers.

#### Survey Supports Conclusions

Our survey of the situation in Los Angeles gives support to the above conclusions. Particularly is this true of the statement regarding firms using the profit sharing basis.

Among the local firms on that basis are: Coffee Products of America, the Eng-Skell Co., the Pacific Chemical Co., and the Los Angeles Rubber Stamp Co.

The most intricate problem now faced by the sales manager is that of conserving his best man power in the face of a decrease in their earnings. Whether or not to decrease the salary or reduce the commission rate to the point where the man resigns and face the expense of training another man to replace him is the dilemma of many sales managers today.

While the reduction of salaries and commissions is the easiest and most obvious method of reducing selling expenses, it should be remembered that such reductions are the means rather than the end.

In other words, the need is for a lower cost per sale. It may be possible to achieve the lower cost by close watch of traveling expenses, working Saturdays, extending the number of calls, lengthening working hours, or cutting administrative expense. The last move should be the reduction of the earning rate of salesmen. In too many cases locally it has been the first step because it is the most obvious.

#### Exploiting Salesmen

Sales management has failed in its responsibility when earning rate reductions or salary cuts are the first cuts in expense rather than the last.

The large surplus supply of sales talent available has been responsible for the growth of practices that amount to little more than exploiting the salesman. Fake advertising, lack of territory protection, do or die training tactics, and little or no support for the salesman characterize the activities of this type of sales organization.

Their principal effort is concentrated on recruiting salesmen rather than selling merchandise. For sales they depend upon each new salesman selling two or three friends and then moving on out of the picture. The Sales Managers Bureau Committee heartily disapproves this type of activity.

In summary, the present trend in compensation methods is toward incentive plans based on commissions, the bonus, or profit sharing methods. The salesman is becoming a partner in the firm with a vital interest in his sales volume, the profit rate on various items, and the reduction of traveling expenses.

Whether or not his position or status will change as we work out of the present depressed business conditions, is an item that will be interesting to watch.

If the salesman is kept on the profit sharing basis there is every indication that within the next three years he will be in a very favorable position.

**Eng-Skell Co.**—Our salesmen's compensation is based on 25 per cent of the gross profits of their sales or sales from

their territories, as they get credit for all sales coming from the territory assigned to them. In addition to this, we give the city salesmen what we call territorial bonus of \$50 per month.

"This bonus is really given to them with the idea of taking care of their automobile expenses. The country salesmen, with the exception of our Arizona man, are given \$75 territorial bonus. These men operate on a drawing account, plus the actual hotel expense, which is charged against earned commission, which, as stated above, is based on 25 per cent of the gross profits. At the end of the sales year, the difference between their drawing account and expenses and earned commission is paid in a lump sum.

"However, we do charge these men back with lost book accounts in their territories, or accounts that have been turned over to our attorney for collection.

"The salesmen are responsible for collections on their accounts, and at the end of the year are charged back with any accounts which we feel are non-collectable, or accounts that have been turned over to the Board of Trade, or into the hands of our attorney.

"Possibly it would be best to illustrate this more clearly. We will say that a salesman's gross sales for the year amounted to \$75,000, the credit losses or the amount owing us which we figure as uncollectable figures \$1,200. This amount is deducted from the \$75,000, which

leaves the man net sales to the amount of \$73,800.

"The average rate of profit for the year would be, for the sake of argument, say 25 per cent. This would figure 25 per cent of \$1,200 (the loss book accounts) and would show \$300 gross profits, and the salesman would stand \$75 of this, which would be deducted from any bonus or compensation paid at the end of the sales year."

**A Local Rubber Company**—"It is understood that we pay our salesmen a basic salary of approximately \$200 a month, also expenses on the road and in addition to this we had, during 1931, the following plan starting with a man making 80 per cent of his quota.

"This bonus was paid to only those salesmen who had been in the field for six consecutive months and the bonus was paid at the end of the year. The bonus schedule follows:

Per Cent of Quota Attained During Year	Per Cent of Salary For Bonus
80% to 85%	2%
85% to 90%	4%
90% to 95%	6%
95% to 100%	8%
100% to 105%	10%
105% to 110%	12%
110% to 115%	14%
115% to 120%	16%
120% to 125%	18%
125% to 130%	20%
130% to 135%	22%
135% to 140%	24%
140% to 145%	26%
145% to 150%	28%
150% or more	30%

"We also had what we called the most valuable players contest in which

we graded our men on the following subjects: complete coverage, dealer advertising, balanced sales, collection attainment, expense to budget, and cooperation and promptness.

"At the end of the period, our head office gave rewards to salesmen of the local branch as follows: first man, \$100; second man, \$75; third man, \$50; and fourth man, \$37.50."

#### Coffee Salesmen

**Coffee Products of America**—Salesmen for Coffee Products own their own cars and pay all their own expenses. On the order sheets turned in by salesmen are figured costs of goods sold and total dollar volume of sales.

Monthly sales sheets for each man, made up from daily reports, show dollar volume sold, selling cost, and gross profit.

Salesmen are furnished price books giving basic costs on each item. Compensation is figured from a basis of 20 per cent gross profit on sales; i.e., the salesman must show a gross profit equal to 20 per cent of his sales volume before he receives his commission.

On receiving this figure he receives 8.5 per cent, or almost one half of the gross profit. If the salesman earns 22 per cent, the company takes half of the overage and gives the salesman half.

#### Opportunity to Share Profits

If he earns only 15 per cent, the salesman stands half the cut and the company half, giving the salesman 6 per cent of his total sales. The company gives a low drawing account to new men. The essence of the plan is to give the salesman a reasonable opportunity to share in the profits.

The company makes it plain that they are not giving their men high salaried positions, but rather are giving them the opportunity to make high salaries if they are capable. Turnover in the sales force has been practically eliminated, the firm having to replace only one man in 1931.

#### Summary of Returns

Questionnaire on salesmen's compensation—183 reports received from Los Angeles manufacturers, wholesalers, and dealers.

#### Forms of Compensation

100 firms pay straight salaries 78 pay on commission basis 67 of these advance drawing accounts

3 do in some cases

8 do not advance drawing accounts

5 firms use profit sharing plan.

#### Earnings

150 firms reported reduced earnings for men in past year 30 reported no reductions 3 did not answer this question.

(The average salesmen's salary taken from firms reporting is \$220 per month.)

#### Changes

40 firms reported a change in compensation plan in the past 12 months.

#### Automobiles

40 companies own salesmen's cars 11 own some of the men's cars 132 firms report salesmen using their own cars.

#### Car Expense

43 companies pay mileage rate, generally about 5 cents or 6 cents per mile 9 companies pay gas, oil, and upkeep 30 companies pay a flat rate for car expense, generally \$50 per month, range from \$35-\$100.

#### Entertainment

86 firms allow entertainment expense 97 do not.

## WISWELL SHOWS LEONARD LINE AT DEALER MEETING

CHICAGO, Nov. 15.—The new line of Leonard electric refrigerators for 1933 made its bow in Chicago today at a dealer convention sponsored by the L. C. Wiswell Co., distributor in northern Illinois.

The speakers, besides L. C. Wiswell, president of the distributing company, were A. M. Taylor, merchandising director for Leonard; C. M. Armstrong, vice president of the Refrigeration Discount Corp.; E. L. Trifitt, vice president of Brooke, Smith & French, Inc., Leonard's advertising counsel, and H. F. MacGrath, district manager for the factory in the Chicago area.

## WESTINGHOUSE BRANCH TO SELL AT RETAIL

ST. PAUL—Westinghouse Electric Supply Co. branch here, northwest Westinghouse refrigerator distributor, has taken over retail distribution of Westinghouse units in St. Paul, replacing Rose & Martin, Inc., in this operation, according to J. L. Fitch of the supply company branch here.

Minneapolis branch of Westinghouse Electric Supply Co. will handle retail distribution in that city. Until recently, another Rose & Martin store handled Minneapolis retail distribution.

## 2 NEW DISTRIBUTORS NAMED BY LEONARD

DETROIT—Appointment of two new Leonard electric refrigerator distributors has been announced by R. I. Petrie, general sales manager of the Leonard Refrigerator Co. of this city and Grand Rapids, Mich.

The new distributors are the General Distributing Co. of Saginaw, Michigan, territory of which embraces 20 counties in the northeastern part of the Michigan peninsula, and Radio and Motor Service of Altoona, Pa., serving nine counties in central Pennsylvania and the two extreme western counties in Maryland.

Official personnel of the General Distributing Co. of Saginaw includes F. S. McWhirter, president and general manager; E. H. Morgan, vice president; C. S. Swain, treasurer, and E. S. Heath, secretary.

Counties which this distributor will serve are Cheboygan, Otsego, Alpena, Oscoda, Roscommon, Iosco, Arenac, Bay Saginaw, Sanilac, Presque Isle, Montmorency, Crawford, Alcona, Ogemaw, Gladwin, Midland, Gratiot, Tuscola, and Huron.

R. P. Good is president and general manager of Radio and Motor Service of Altoona, Pennsylvania counties comprising this company's territory are Potter, Clinton, Blair, Somerset, Fulton, Cameron, Center, Huntingdon, and Bedford while those in Maryland are Garrett and Alleghany.

## WESTINGHOUSE EXECUTIVE DIES AT FOOTBALL GAME

EAST PITTSBURGH, Pa.—George Baily, assistant sales manager of the Westinghouse merchandising department, died of cerebral hemorrhage on Oct. 29 while attending the Pittsburgh-Notre Dame football game.

Mr. Baily was born in Baltimore. He attended Lehigh University, where he was an outstanding athlete, starring in football. He was graduated in 1904.

Following his graduation he came to Pittsburgh and went into the construction business. Later he moved to Cincinnati, where he entered the employ of the Westinghouse Electric & Mfg. Co. in its Cincinnati sales office.

He remained there until 1917, when he received a commission in the 308th Engineers as major. He served with the engineers throughout the war.

He rejoined Westinghouse, after the armistice, again in Cincinnati. Later he was sent to Pittsburgh, then to New York City. From New York City he was transferred to the Pacific Coast.

Then he returned East, making his headquarters in Mansfield, Ohio.

## CLEVELAND DEPARTMENT STORE HOLDS 'KARNIVAL'

CLEVELAND—The May Co., local department store, recently conducted a fifth floor "Kitchen Karnival." Headlining a group of attractions was Westinghouse's "Willie Vocalite."

Numerous demonstrators of various kitchen and electrical appliances were present. A free towel was given to each person who would iron it on an electric ironer, and down payments were offered as prizes to persons guessing the number of handkerchiefs being washed in an electric washing machine.

Other features of "the biggest show in town" were an Indian princess who wove baskets, a "human robot" who demonstrated ranges, cold cooking demonstrations, a workman making cut glass, an artist painting tumblers, a "canned food" chef, and an "Aunt Jemima."

## WEINER WINS \$25 PRIZE OFFERED BY CREDIT FIRM

NEW YORK CITY—Philip S. Weiss, Bond Street retail division, Rex Cole Inc., General Electric distributor here, won the \$25 award which was offered by the Commercial Credit Co., Baltimore, for the retail salesman with the best sales record, from Oct. 17 to Oct. 21, in each G. E. distributorship.

The award was offered by the Commercial Credit Co. in cooperation with the Monitor Top Election Campaign and was payable to the man who qualified in each distributorship.

Weiner, at the beginning of the month in question, had 33 per cent of his quota. On the last day of October he had 174 per cent, a gain of 141 per cent in the stipulated period.

## RICHARDSON TO MANAGE DALLAS STORE

DALLAS, Tex.—E. S. (Dick) Richardson, one of the leaders in a recent general Electric sales contest and winner of a trip to the New York plants, has been appointed sales manager of the Electric Appliance Stores, Inc., here according to S. C. Griswold, president of the appliance company.

Richardson is widely known in Dallas as the former organist at the Palace theater.

WRITTEN TO BE READ  
ON ARRIVAL

# Engineering Section

IN TWO PARTS  
PART TWO

## ELECTRIC REFRIGERATION NEWS

Registered U. S. Patent Office

The business newspaper of the refrigeration industry

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DETROIT, MICHIGAN, NOVEMBER 16, 1932

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Aug. 1, 1927, at Detroit, Mich.

THREE DOLLARS PER YEAR

### 4 REFRIGERATORS BROUGHT OUT BY STEVENS WALDEN

#### Tudor Named Manager Of Refrigeration Division

WORCESTER, Mass.—With the introduction of four household electric refrigerators which it will manufacture and distribute, Stevens Walden, Inc., has just officially entered the refrigeration field.

A manufacturer of automotive tools and wrenches, this company has recently been known to the refrigeration industry as a supplier of fans, compressors, shafts, and other parts.

H. T. Tudor, formerly managing executive of the Iceberg Mfg. Co., Gardner, Mass., is manager of the new Stevens Walden refrigeration division.

Four models comprise the new line. Model 44 has a gross capacity of 4.4 cu. ft. and 6½ sq. ft. of shelf area. It is finished outside in white lacquer, inside in porcelain. Two inches of Sampson's Fibrocell is used for insulation. The cabinet stands 53 in. high, 20½ in. deep, and 23¾ in. wide.

Model 44 uses a Fedders evaporator, while the other sizes, yet to be described, use Detroit Lubricator's Castincoil evaporator.

The next size, model 54, has a gross capacity of 5.4 cu. ft., with 9 sq. ft. of shelf area. This refrigerator stands 58 in. high, 22½ in. deep, and 25½ in. wide. It is insulated with three inches of Dry-Zero.

Model 65 has 6.4 cu. ft. of gross storage capacity, and 11.7 sq. ft. of shelf area. Its height is 58 in., depth 24 in., and width 28 in.

The largest cabinet in the line, model 80, has 8 cu. ft. of gross capacity, 13.6 sq. ft. of shelf area, and stands 58 in. high, 25 in. deep, and 32 in. wide.

Specifications common to all models are: all-steel cabinets, lacquer exterior

(Continued on Page 3, Column 5)

### DEISSLER ANNOUNCES 4-CYLINDER MACHINE

GREENVILLE, Pa.—A new compact 4-cylinder refrigeration compressor for ½-, ¾-, or 1-hp. motors is being introduced by the Deissler Machine Co.

The compressor is of the reciprocating type, with the crank-shaft arranged to bring one piston at a time up to a compression stroke, in order to reduce vibration, according to V. G. Deissler, manager of the company. Cylinders are of semi-steel, the crank-case is cast in one block. Pistons are of cast iron, ground to size and provided with one special piston ring.

The eccentric shaft is forced steel-hardened and ground, and is provided with bronze bearings. Eccentric rods are of semi-steel, heat-treated and ground, Mr. Deissler announces. Suction and discharge valves are of the disc type, lapped to their seats.

### CHICAGO A.S.R.E. DISCUSSES CO<sub>2</sub> REFRIGERATED TRUCKS

CHICAGO, Nov. 16.—"The Use of Solid Carbon Dioxide for Truck Body Refrigeration" was the subject of an address by C. G. Querman, York Ice Machinery Corp., at the November meeting of the Chicago section of the American Society of Refrigerating Engineers held last night at the Chicago Engineers' Club.

Querman described the developments in equipment for the use of solid CO<sub>2</sub> or dry ice for truck body refrigeration, and explained the operating features of the equipment, according to Ben E. Seaman, secretary of the Chicago section.

Inner preceded the meeting. O. A. Anderson was chairman and G. F. McDonald, vice chairman of the meeting.

### A. H. BAER JOINS CARBONDALE AS VICE PRESIDENT

CARBONDALE, Pa.—A. H. Baer, formerly sales manager of the Frick Co., Weynesboro, Pa., has joined the Carbondale Machine Co. in this city as vice president.

### Air Conditioning For Human Comfort Cited By Carrier As New Industry To Aid Recovery of Business

By Willis H. Carrier, Chairman of the Board, Carrier Corp.

LESS than a century ago farm laborers who toiled from dawn to dusk at 75 cents per day rioted and destroyed the first mowing machines. Poorly paid spinners and weavers wrecked some of the first spinning jennies and power looms in England. At this time we again hear the cry of those who would place upon the "machine age" the responsibility for unemployment and economic instability.

The "gloomy Dean" Inge of England has gone so far as to beg scientists to take a 10-year holiday that civilization might catch up.

It is obvious that we should endeavor to maintain our equilibrium, but beyond this we have no further choice in the matter. Man will go on. New devices create new wealth, call for new raw materials, and create new uses for old ones.

Our sudden and accelerated mechanical advance seems to have arisen through a vast collective and individual creative urge, a new phase in human development, and as an engineer I have only confidence in the future to which liberating mechanisms are leading us.

Just now there does seem to be some justification for the claims that machines and over expanded industries have brought about temporary distress and unemployment. The phenomenal growth of the automobile industry, for example, has called thousands of men from the farms and other occupations.

In specialized industrial centers, they have become temporarily dependent upon the prosperity of a single enterprise. Their standard of living, so far as modern luxuries are concerned, has been raised but their reserve is not large. Therefore, saturation or stabilization of the market for their product throws men out of work, leaves them stranded.

The mobility of labor and the flexibility of industry, as well as the stability of credit, to avert recurrence of these conditions is a problem yet to be solved. The immediate situation imposes a crying need for new industries, which will contribute wealth and employment in a degree comparable to that produced by the automobile, the radio, and the household refrigerator.

In the anxiety to identify such a bright spot, some economists have pointed to the field of air conditioning.

Although I do not feel that this new industry or any other single industry can be called upon alone to produce an immediate and miraculous recovery, it is my own opinion that air conditioning will contribute substantially in numerous direct and indirect ways to business improvement and to the maintenance of the tempo of our advancement.

Climate has always exerted a dominant influence upon the

(Continued on Page 4, Column 1)

### SOLID CO<sub>2</sub> REFRIGERATED TRUCK CARRIES FLOWERS

PITTSBURGH—Flowers as well as perishable foods need refrigeration to keep them fresh in transit. So the McCallum Co. of this city has purchased a refrigerated truck of 1,000 lb. capacity to haul cut flowers. One hundred mile round trips, with approximately 20 to 25 stops are made daily.

With the exception of the steel and wood framing, the body is constructed entirely of aluminum. Dry-Zero blanket insulation is used in the sides, ends, and doors, while solid CO<sub>2</sub> maintains temperatures from 40° to 50° F.

### INDEPENDENT SERVICE FIRMS ORGANIZE IN CHICAGO

CHICAGO—Organization of the Chicago Master Refrigeration Service and Installation Association was recently completed by 15 independent service companies in this city to raise the standards of service and installation work. Meetings are held every other Tuesday night in the Washington hotel.

Officers are: president, George Monjan of the Chicago Refrigeration Service Co.; vice president, B. H. Preston of All Makes Refrigeration Service Co.; secretary, Albert Wiel of Refrigeration Maintenance Co.; and treasurer, Mrs. Margaret Thurber of the National Refrigeration Service Co.

The Chicago Steamfitters' Union recently started a refrigeration division, admitting refrigeration service men.

### TWO MANUFACTURERS ANNOUNCE NEW COMMERCIAL CONTROLS

#### New Detroit Lubricator Switch Featured By Metallic Contacts

DETROIT—Engineers of the Detroit Lubricator Co. are bringing out a new No. 250 "Genuine Detroit" low-pressure control switch for commercial refrigeration, C. J. Swan announces.

Unlike previous high-voltage controls of the company, the new switch uses metallic contact buttons, operating between the poles of a small permanent magnet which serves to "snuff out" the arc of a breaking circuit, and to provide a quick make and break action.

The control is enclosed in a black Bakelite case, with a removable cover, and uses a conventional bellows type power element to actuate the make and break of the circuit.

For temperature control operation, a thermostatic bulb element is connected to the bellows with a 4-ft. length of tubing. Two different liquids are offered for the thermostatic element, depending upon the requirements of the refrigeration system, one with an adjustable range from -30° to 60° F., the other with a range from 10° to 70° F., and correspondingly closer differentials.

To secure proper operation of farm milk coolers where the temperature of the air around the control may in winter fall below the temperature of the liquid being refrigerated, the designers have devised a special thermostatic bulb, 22 in. long.

High-pressure cut-out protection is available on both pressure and temperature controls with the addition of a high

(Continued on Page 2, Column 5)

#### Minneapolis-Honeywell Technicians Refine Mercury Tube Switch

MINNEAPOLIS—A new line of commercial refrigeration controls, with either pressure or temperature elements, and with high pressure cut-outs as an optional feature, is being introduced by the Minneapolis-Honeywell Regulator Co.

Re-designed mercury switches, visible scales, locking provisions, and interchangeable thermal elements have been incorporated in the new controls, according to L. B. Miller, in charge of the refrigeration division.

Chief refinement in the mercury tubes is the development of a high temperature ceramic material over which the electric circuit is made and broken, Mr. Miller states. Being of high temperature material, the ceramic is practically impervious to the action of the electric arc, he claims.

In the new mercury switch, the electrodes have been placed in either end of the glass envelope to permit the use of larger lead-in wires, and to separate the leads protection against short circuits.

"The basic operating mechanism around which the new control is designed consists of a wide main operating lever provided with hardened fulcrum grooves which is supported by a pair of hardened knife edges," Mr. Miller explains. "These are widely spaced to eliminate variations in the position of the main operating lever."

"The main lever is balanced by a tension spring which is provided with an adjusting screw located at the top of the case. The differential operating mechanism consists of an auxiliary lever which is balanced by a tension spring with its adjusting screw, also on the top of the case, arranged in a manner to impose the additional load on the main lever to obtain the increased differential."

Both the main spring and the differential spring are provided with pointers which indicate on visible scales mounted on the side of the case, the cut-out and cut-in temperatures at which the control will operate for any particular main or differential adjustment setting.

Both the main range and differential adjustment screws are provided with cross drilled holes through which may be threaded a standard wire with lead

(Continued on Page 3, Column 5)

### AIR CONDITIONING ON WARM AIR PROGRAM

URBANA, Ill.—The program of the December convention of the National Warm Air Heating Association to be held here Dec. 7-8 has just been announced.

F. G. Sedgwick, chairman of the research advisory committee of the association, will give the report of the committee, and will lead an inspection tour of the research residence, at the first session of the convention, Wednesday morning.

In connection with this program, A. C. Willard, professor of heating and ventilation at the University of Illinois, will present a resume of the research work during the summer and fall.

At the Wednesday afternoon session, J. D. Hoffman, chairman of the code committee, and director of the department of practical mechanics, Purdue university, will discuss the mechanical code for warm-air furnace heating systems in residences, and will give the report of the code committee.

Dean M. S. Ketchum, of the College of Engineering, University of Illinois, will discuss the research work of the engineering experiment station of the university, and A. P. Kratz, research

(Continued on Page 3, Column 5)

### PATENTS ON AIR COOLING, REFRIGERATION INCREASING

WASHINGTON, D. C.—At a period when total patent applications are declining at a rate of more than 12 per cent, applications for patents on air conditioning, refrigeration and automotive devices are increasing steadily, according to Thomas E. Robertson, commissioner of patents, Patent Office.

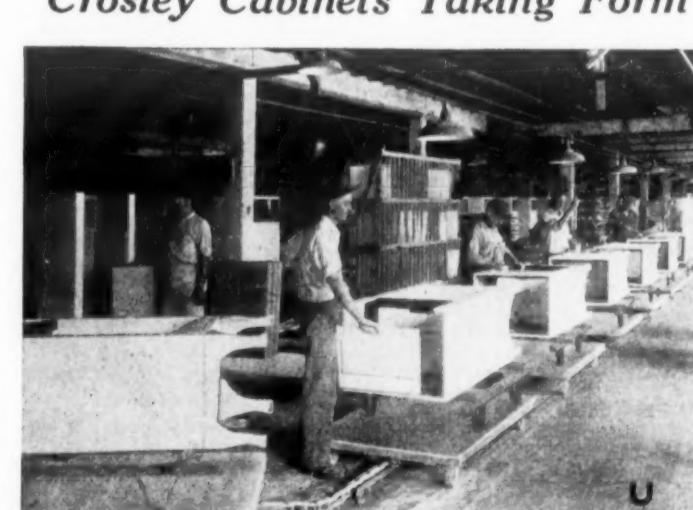
In the past year, according to Robertson, there has been an influx of applications for patents in connection with air conditioning, refrigeration, oil burners, de-waxing oils for automobile lubrication, alloys, electric clocks, the automobile industry, and devices for rendering railroad travel more comfortable, safer, and less expensive.

Many of the applications represent the engineering talent of already established companies which wish to improve their products, Commissioner Robertson states.

At the same time, other applications reveal the ideas of American consumers. Of the 20,000,000 automobile owners of the United States, for example, many have ideas for improving the efficiency or comfort of this form of travel, he states.

### MILWAUKEE ENGINEERING SCHOOL REORGANIZED

MILWAUKEE—Reorganization of the Milwaukee School of Engineering as a semi-public educational institution, and the selection of a Board of Regents comprised of prominent industrial and professional men, has just been announced by Oscar Werwath, president. Henceforth, the school will be conducted on a non-profit basis, the announcement states. The curriculum includes a course in electric refrigeration.



Crosley workers, left to right, are installing insulation, placing front panel in position, putting on breaker strips, and fastening hardware.

### LITERATURE OF MANUFACTURERS

Catalogues, bulletins and other materials recently issued. Manufacturers are requested to send copies of new trade literature to Electric Refrigeration News.

#### Watts Valves

A circular describing Watts pressure reducing and pressure regulating valves has been received from John G. Kelly, Inc., exclusive distributor of Watts products in New York City. Three pressure reducing types and five pressure regulating models are described. A pressure reducing and measuring valve, type 26-G has been used extensively on gas refrigerators.

#### Hilger Air Coolers

The X L Refrigerating Co., Inc., Chicago, manufacturer of Hilger unit type air coolers and conditioners, unit type condenser towers, and unit type spray cooling towers, has issued a six-page booklet describing its products. Special features of the units, specifications for the different models, diagrams, and charts showing the refrigerating capacities of the various units are contained in the pamphlet.

#### Boxill-Bruel Brushes

Catalog No. 13 issued by the Boxill-Bruel Carbon Co., Columbia Park, Ohio, deals with carbon brushes for single-phase motors, fractional hp. d.c. motors, farm lighting motors and generators, refrigerator motors, vacuum cleaners, etc. It likewise describes carbon plates, round carbons, utility brush strips, commutator stones, small brush kit, cable terminals, alloy and tamping tools.

#### Lewis Humitrol

Lewis Air Conditioners, Inc., Minneapolis, has just issued a folder describing its new Humitrol, a device to control

the humidity of the air. The pamphlet tells what the Humitrol does, how it operates, its construction, range of control, spark-proof switch, and current capacity. Five diagrams showing methods of installation are also included.

#### Imperial Valves

Imperial refrigeration products for builders of mechanical refrigerators, jobbers, and dealers of refrigerator parts, installation contractors, and service men are the subject of catalog No. 77 published by the Imperial Brass Mfg. Co., Chicago. Valves, manifolds, line strainers, dehydrators, various fittings, and tools, are described.

#### Truscon Roofdecks

Pictures of installations, and a description of a combined insulated and waterproofed steeldeck roof and acoustical treated ceiling are contained in a folder on Truscon Ferrocoustic Roofdecks issued by the Truscon Steel Co., Youngstown, Ohio. Truscon engineering and sales offices are also listed in the folder.

#### Cash Valves

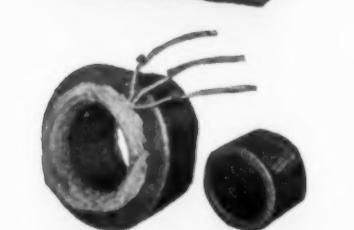
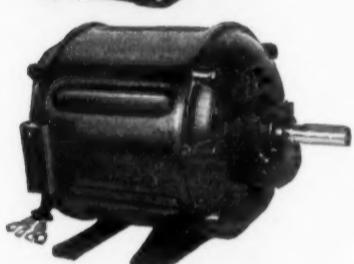
A. W. Cash Valve Mfg. Corp., Decatur, Ill., has issued a 24-page booklet showing its complete line of valves, several of which are adaptable to refrigeration. Cash Acme-type D-5 refrigerant controlled water regulators designed to control automatically the flow of water to condenser coils on water-cooled electric refrigerators are described, as also ammonia water controlled water regulating valves. Type A-31 valves designed for humidifiers, water coolers, and gas refrigerators, are likewise included.

#### Bristol's Humidigraph

Relative humidity and its measurement is the subject of a folder issued by the Bristol Co., Waterbury, Conn., describing its Humidigraph, a new direct-reading, relative humidity recorder. Industries and buildings in which the Humidigraph has been installed are listed.

## Specified

FOR ULTRA-QUIET AND DEPENDABLE MOTOR PERFORMANCE



#### Wagner Repulsion-Start Induction Motors

The preferred motor for electric refrigerators—rubber-mounted for domestic; rigid-mounted for commercial units. High efficiency, long-hour duty performance, quiet from start to stop—ideally suited for refrigerator duty. All frequencies, voltages interchangeable for given horsepower ratings.

#### Wagner Rubber-Mounted Motors

For ultra-quiet, vibrationless performance—designed especially for domestic refrigerators where absolute silence is demanded. All types of Wagner motors are available with rubber-mountings. Interchangeable with rigid-mounted motors.

#### Wagner Capacitor Motors

A compact unit—the last word in capacitor motor design, applicable to the majority of refrigerators requiring small fractional horsepower motors. Conduit-box is part of the capacitor-box—no special appendages; all connections made in one box, rigid or rubber-mounted. Interchangeable with other types.

#### Wagner Built-In Motors

The product of some fifteen years of experience in refrigerator-motor building—designed and built to operate without attention in hermetically-sealed refrigerator units. High efficiency, low operating temperature, specially designed to operate in refrigeration fluids.

For complete description, ask for Bulletin 167

**Wagner Electric Corporation**

6441 PLYMOUTH AVE., ST. LOUIS, MO.

## New 'Genuine Detroit' Control



Detroit Lubricator's new control (pressure type) with side-plate removed. The range is adjusted on the dial at right, the differential is adjusted by the thumb-screw on top.

## DETROIT ENGINEERS DESIGN NEW COMMERCIAL CONTROL

(Concluded from Page 1, Column 4) pressure cut-out and temperature controls with the addition of a high-pressure cut-out on top of the switch. The cut-outs are designed to stop the compressor when high side pressures exceed a predetermined point, adjustable from 125 to 200 lbs. in range No. 1, or from 70 to 130 lbs. in range No. 2.

The main control adjustment, a dial on the end of the switch which is furnished with graduations either in degrees temperature or pressure indicated by lbs. or inches of vacuum, can be manually regulated by means of a small adjusting wheel, to give an operating range from 20 in. vacuum to 40 lbs. pressure.

The differential adjustment, which does not alter the cut-in point of the compressor, is mounted on top of the case and can be set to give any differential from 5 to 25 lbs.

The contacts of the new control will carry 110 or 220 volts, a.c. or d.c. On 110 volts of a.c., it will handle 1-hp. repulsion-induction motors; 1/4-hp. split-phase motors, 10 amperes on non-inductive load. On 220 volts of a.c., it is rated for 1-hp. repulsion-induction motors; 1/4-hp. split-phase motors, 5 amperes on non-inductive load. With 110 volts of d.c. it carries 10 amperes, and at 220 volts, 5 amperes.

A variety of electrical and refrigerant fittings are available to suit the individual needs of manufacturers, Mr. Swan announces. Both main and differential adjustments can be provided with a screw-driver slot, and the differential can be set and sealed by the refrigerator manufacturer, if desired.

## PLAN 'PORCELAIN PARADE' FOR CENTURY OF PROGRESS

CHICAGO—"Join the Porcelain Enamel Parade," is the slogan which has been adopted by the exhibit committee of the Porcelain Enamel Institute here, since completing negotiations for a cooperative exhibit to be held in conjunction with "A Century of Progress" international exposition in Chicago from June to November next year.

As outlined by the institute's committee, the porcelain enamel parade will consist of 100 or more porcelain enameled products and materials used in their manufacture, and will wind for 300 to 500 ft. through the General Exhibits building at the 1933 World's Fair.

Standing at the side of each product exhibited will be a soldier dressed in a brilliant porcelain enamel uniform, holding a porcelain enamel sign on which will be the name of the exhibitor's company.

In conjunction with the parade, the institute will sponsor an educational exhibit which will consist of a miniature operating enameling plant, and a comprehensive display telling the story of porcelain enamel.

In announcing the parade, R. W. Staud, president of the institute, said: "By arranging with 'A Century of Progress' for this parade we are giving the manufacturer of porcelain enameled products a chance to show his equipment to literally millions of people at a price well within his reach."

#### NEW SUPPLY FIRM

BOSTON—Refrigeration Supply Co. here has been organized by Henry F. Riley and associates to sell parts and supplies to the refrigeration trade in this district. The company acts as New England agents for Melchior, Armstrong & Dessau of New York City.

## LIKENS AIR COOLING TO HEAT CIRCULATION

DETROIT—"The circulation of cold air for comfort cooling presents a problem similar in principle, but different in application, to that of air distribution for unit heater work," states G. I. Palmer, refrigeration engineer, M. Cord Radiator & Mfg. Co., here.

Avoiding drafts is of considerable more importance in a comfort cooling application than in unit heater practice, which means that in cooling, the air diffusion must be quick and complete he points out.

"Due to the fact that cold air falls and hot air rises, it is necessary to direct the cold air streams upward, rather than downward as in unit heater practice. On this principle, the ceiling has been made use of as deflector or diffusion point in comfort cooling.

"Our experience, based on research and experiment, has led us to adopt the overhead type of convective cooler, which lends itself to rapid circulation of air with the absence of drafts," Palmer says. "Adjustable louvers were built in the convective housing to permit control of the amount of elevation of the air leaving the unit."

Two principal methods of air distribution are available to the overhead type unit, he explains. First, placing the overhead unit near a wall, and directing its flow of air outward toward the window of a room and at the ceiling, with only sufficient velocity to reach the point where air diffusion and dropping may occur. A proper installation of this type will produce sufficient diffusion and a sufficiently low rate of fall to avoid drafts.

The second type of system calls for the use of two or more convective units located so as to direct the cold current of air against the ceiling and around the room.

"If a sufficient number of units are used, and if sufficient velocity is maintained, a band or layer of cold air, more than two or three feet thick, will be maintained at the ceiling. In this case the diffusion is slowly downward, displacing warm air, which rises and is caught in the moving layer of cold air," Palmer states.

"Properly installed, this second system is independent of drafts, window openings, etc. It has been used for several years on railroads and found satisfactory. The requirement, however, is that at least two units be allotted to a space, and that a relatively high velocity be maintained," he concluded.

## Detroit Gasket Maker Has 25 Different Lead Alloys

DETROIT—Twenty-five different alloys can be produced for the various gaskets, washers, etc. in the plant of the Lead Alloy Products Co., Detroit makers of lead "Or-Loy" material for refrigeration gaskets.

Lead is a dense flexible metal, and can be fabricated with tin, copper, or antimony in alloy compositions, G. C. Noonan, sales department, explains. Its features in a refrigeration gasket are the fact that it does not require shellac or auxiliary liquids to fill pores or machine marks, and that it is not subject to capillary attraction with liquids, he explains.

Lead alloys are rolled in the Lead Alloy plant in thicknesses from .005 in. up to .25 in., tolerances as close as one-half of one thousandth being possible.

## NORGE SURVIVES CONEY ISLAND FIRE

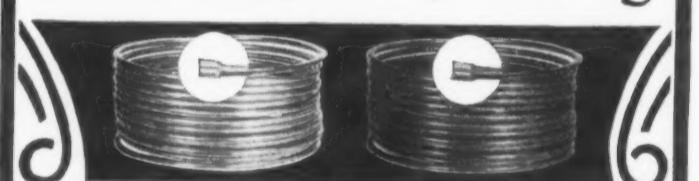
NEW YORK CITY—In the midst of the ruins of the Coney Island fire, a badly damaged building was found to contain a Norge refrigerator. Outwardly discolored, the Norge was still providing a safe storage for the foods that had been placed there before the fire.

The building was located on Surf Ave. near 23rd St. in the heart of the conflagration zone. As the electric service was resumed, the Norge ran just the same as before.

## NEW G. E. CAPACITORS USE PYRANOL DIELECTRIC

SCHENECTADY, N. Y.—Substantially reduced prices together with reductions in size, rating for rating, characterize a new General Electric line of capacitors for power-factor correction. These devices are treated and filled with Pyranol, a dielectric material whose insulating and dielectric properties permit a small capacitor for a given rating and which is non-inflammable and non-explosive. The line also includes new box-type units and small rack-type capacitors, both for indoor service.

## WOLVERINE Seamless Dehydrated Tubing



#### Copper-Plain or Tin Plated-Solder Sealed

This highly specialized product is the standard of the industry. Saves time. Saves labor. Saves service cost. Immediate shipment from large stock.

Eastern Sales Office  
420 Lexington Ave., New York  
Los Angeles Office  
1015 East 16th St.



Wolverine Tube Co.  
1491 Central Ave.  
Detroit  
29 Sales Offices

## for AIR CONDITIONING EQUIPMENT...

## Artic

(R & H Methyl Chloride)

is

the Answer to the Refrigerant Problem

BECAUSE it has the qualities of an ideal refrigerant, ARTIC offers unusual advantages for air conditioning in homes, offices, industrial plants and railroad cars.

All inquiries addressed to our Technical Service Division will receive prompt and confidential attention.

## THE ROESSLER & HASLACHER CHEMICAL CO.

Incorporated

Empire State Building 350 Fifth Ave. New York, N. Y.

## MINNEAPOLIS CONCERN BUILDS NEW CONTROL

(Concluded from Page 1, Column 5)  
seal to lock the adjustments in the event that it is so desired.

The temperature control (type T414-1) is furnished in three standard ranges, covering temperatures from -50° F. to plus 50° F. The minimum differentials obtainable in all of these three ranges are approximately 2½°. This differential may be adjusted up to a maximum of 12° to 15°.

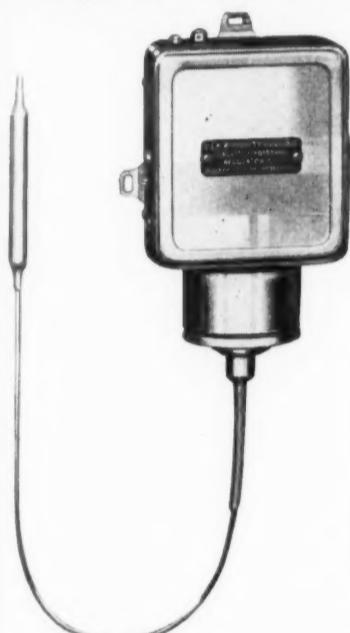
The temperature element is a bulb designed to provide remote control where it is not practical to place a thermostat. A change in temperature produces a pressure in the bulb which is transmitted to a bellows which tilts the new mercury switch to make and break the circuit.

Type L414-1 is a new low side or suction pressure control. Incorporated in this control is the same standard operating mechanism as used in the type T414, but using a pressure element in place of a temperature element.

The range of this control is from 22 in. of vacuum to 35 lbs. pressure. The minimum differentials are 3 in. of vacuum at 22 in. 2 at 0 pressure, and 3 lbs. at 35 lbs. pressure. These differentials can be increased to 25 or 30 lbs. maximum at any point on the scale, Mr. Miller announces.

Type L413-1 control is the standard LA14-1 suction pressure control equipped with a high pressure cut-out element. The low side or suction pressure element of the control is identical to the type L414-1 and three ranges of high

### Temperature Control



Minneapolis-Honeywell's new control

pressure cut-out will be furnished for the different refrigerants with which the control may be used.

Type T414-1 is the standard T414 equipped with the high pressure cut-out element the same as used on the type L413-1.

The No. 149 air switch is continued in the line but has been re-designed to incorporate an adjustable differential as well as locking provisions. The range of this control is from 15° F. to 95° F., and the minimum differential is 3° adjustable up to 8°. With these new provisions the airswitch is now suited for application in walk-in boxes and similar equipment and, in being provided with an adjustable differential, the installation of the control is facilitated, Mr. Miller points out. After installation it is possible to adjust both the main range and the differentials to the requirements of the equipment.

### NEW MUNDET CORK AGENT

CHARLOTTE, N. C.—Mundet Cork Corp., manufacturer of cork products, has appointed C. R. Howard distributor for North and South Carolina. His office is located at 408 Hillcrest Ave., here.

**ACE**  
HARD RUBBER EQUIPMENT FOR  
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## Australian Refrigerating Engineers Meet



Australian refrigerating engineers gather for their annual banquet in East Sidney. See report below.

### PUFFER-HUBBARD TESTS NEW VENTILATED CABINETS

MINNEAPOLIS—R. T. Phillips, president of Puffer-Hubbard Mfg. Co. here, has just announced results of tests made in Minneapolis and Chicago with the new refrigerator cabinets, equipped with the Moore ventilation system, which his company is introducing (*Engineering Section*, Nov. 2 issue, *ELECTRIC REFRIGERATION NEWS*).

The company will start production of the cabinets, and will probably offer them for sale to refrigerator manufacturers, according to Mr. Phillips.

Puffer-Hubbard will also manufacture a line of domestic and commercial refrigerators, using the Moore system, possibly under the brand name "Chesterfield," which the company has copyrighted. Plans for distributing these units have not been announced.

In making the tests, two 5-cu. ft. refrigerators were used, one having a ventilated cabinet, the other not. Each test lasted eight days, was made in the presence of unbiased judges, and was designed to test the efficiency of the ventilated cabinet in preventing food shrinkage, dehydration, and odor transference, according to Mr. Phillips.

The two refrigerators were installed in rooms of average temperature and humidity conditions. Each refrigerator cabinet was cooled to a temperature of 42½° F., and was then stocked with a variety of foods.

Each item of food was placed in a similar location in each cabinet, and no food was placed immediately below the cabinets' evaporators. Steaks were hung from the cabinet shelves, to facilitate their being contacted on all sides by air, according to Mr. Phillips and his sales engineer, Clayton H. Propper.

In one type of test, doors of the two cabinets were opened at frequent intervals. In another, the doors were opened once every 24 hours, the two men state.

At the end of each 24-hour period, judges tasted and smelled all foods in both boxes.

At the close of each eight-day test, it was found that unsalted butter from the ventilated cabinet was useable, although it had a slightly stale taste, while butter from the unventilated cabinet was declared by the judges to be unfit for use, Messrs. Phillips and Propper state.

Sliced onions in the ventilated box had undergone a "healing" process on their edges, which had retarded shrinkage and dehydration to a greater extent than in onions from the unventilated cabinet.

Ice cubes from the ventilated refrigerator were said by judges to be suitable for use in drinking water, while those from the other cabinet were not, according to Mr. Phillips and Mr. Propper.

Steaks stored in the unventilated box had undergone a 66 2/3 per cent shrinkage, and were badly discolored at conclusion of the tests, the men say, while judges declared those from the ventilated box to be "saleable, and shrunken less than 10 per cent of their original size."

Transfer of odors was much less in the ventilated cabinet, the men report.

In another test conducted to determine proper adjustment of the ventilating system to prevent moisture condensation in the ventilated cabinets, one ventilated and one unventilated refrigerator were operated in a room temperature of 100° F. and actual humidity of 85 per cent, according to Mr. Propper.

In addition to determining the proper adjustment of the system necessary to prevent excess condensation in the ventilated cabinet, the test showed that the ventilated refrigerator's current consumption was two to five per cent more than that of the unventilated refrigerator, Mr. Propper says.

Installation of an 8x9x10-ft. Puffer Hubbard walk-in cooler, using the Moore ventilating system, has been made in a Red Owl food store in St. Cloud, Minn., according to Mr. Phillips. A Copeland condensing unit is used with the cooler.

### 140 Engineers Meet In Australia

EAST SYDNEY, New South Wales—More than 140 members attended the third annual dinner of the Institute of Refrigerating Engineers of New South Wales, which was held here recently.

The banquet menu, concocted in terms well known to the refrigeration industry, included: cream of tomato in SO<sub>2</sub>; sharp-frozen fillets of whale with alkaline brine sauce; chilled chicken in gas storage; super-heated plum pudding

coated with anti-fouling solution; cold stored apples encased with insulation; NH<sub>3</sub> cream; quick-frozen cheese and heat-treated biscuits; and lubrication (coffee).

J. T. Melville, president of the institute, gave the first toast to "The King." He was followed by W. Williams who drank to the health of "The Refrigerating Industry."

Vice presidents J. E. McColl and J. S. Dunsmore toasted the "Federal Government" and "State Government" respectively. While Past President J. Telfer drank his toast to "Kindred Associations" and Councillor P. B. McEwing to "Guests."

## AIR CONDITIONING TO BE DISCUSSED BY ENGINEERS

(Concluded from Page 1, Column 4)  
professor, and S. Konzo, research associate, will discuss recent research.

G. D. Kingsland, Minneapolis, will speak on automatic control as applied to warm-air heating and air-conditioning systems at the same session. The banquet will be held at the Urbana-Lincoln hotel at 7 p. m. on Wednesday.

The Thursday morning session will be opened with a report by D. C. Simpson on the results of tests made by Prof. Frank B. Rowley on gravity warm-air systems to determine comparative operating characteristics with and without air filters.

### STEVENS WALDEN IN FIELD WITH HOUSEHOLD MODELS

(Concluded from Page 1, Column 1)  
finishes, porcelain liners, 5-in. legs, methyl chloride refrigerant, Ranco thermostatic controls, a cold tray for crispings salads, etc., and the machine in the bottom of the cabinet.

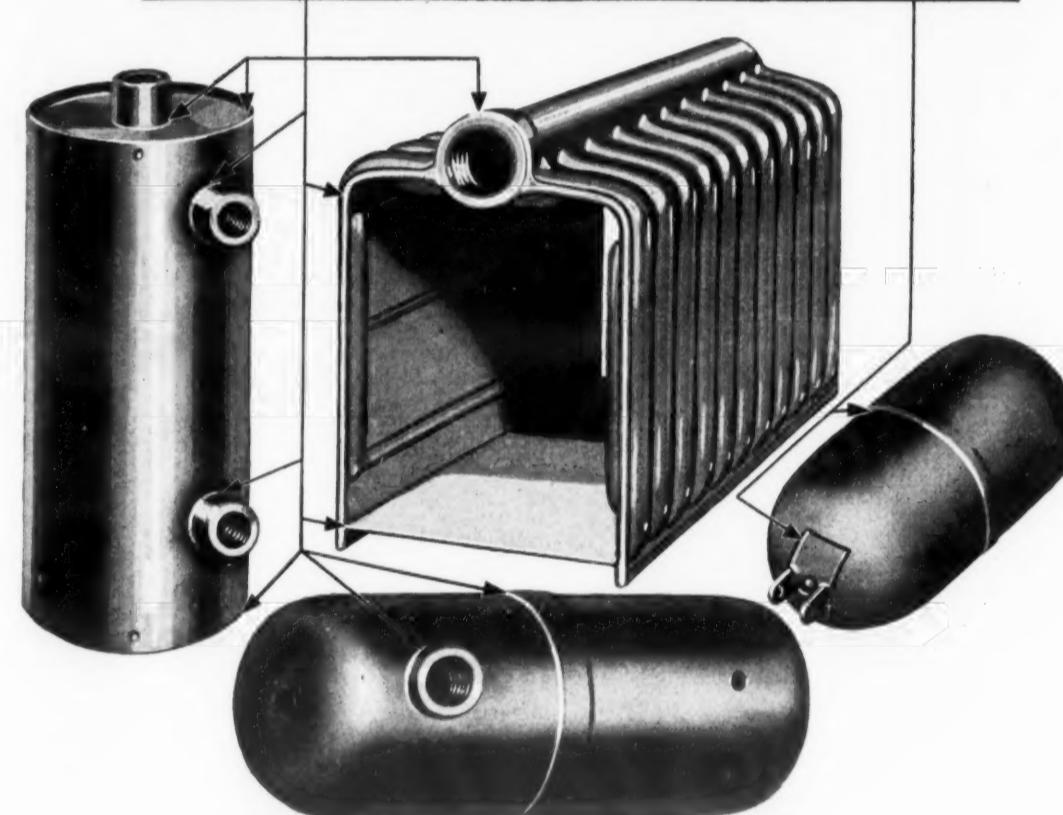
The condensing unit uses a 1/6-hp. motor, belt-driven. The cylinder and crank-case are cast in a single unit. The cylinder is provided with an oil return from the suction port to the crank-case.

Connecting rods, crank-shafts, wrist pins, and pistons are operated through an eccentric which is anchored to the shaft. The wrist pin is hardened and ground, fitted with a bronze bushing. Ringless pistons are used, having grooves to carry oil.

Both suction and discharge valves are located in a removable plate under the cylinder head. Valves are of the flat steel disc type.

The factory is a modern building, with Cooper-Hewitt lights, an employes' cafeteria, automatic conveyors, electric hoists, and includes cadmium, chromium, and nickel plating plants.

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### Now all welds on Steel Refrigerator Units handled at one operation

Copper Hydrogen Electric Welding is a process that permits all the welds on a given steel unit to be handled at one operation.

This elimination of individual welding operations is a money saver of the first order.

Such steel units as evaporators, condensers, tanks, floats, etc., are excellent examples of assemblies on which all welds can be made simultaneously.

All welds are of pure copper at all points of contact.

Welding by this process has many advantages: namely—longer life—permanent strength at the joints—gas tightness and a clean scale free surface.

We are now engaged in the production of the above illustrated units for the refrigerator industry. Other manufacturers in the same line are invited to investigate the merits of Copper Hydrogen Electric Welding.

Complete information on request.

# BUNDY TUBING CO.

Detroit, Mich., U. S. A.

ALSO MANUFACTURERS OF BUNDYWELD STEEL TUBE

# Willis H. Carrier, Pioneer in Art of Air Conditioning, S

## Tells Institute of Electrical Engineers Basic Principles of Air Conditioning

(Continued from Page 1, Column 3)  
destinies and advancement of the races. Those residing in the temperate areas of the earth have advanced, while those whom time and circumstance have placed in tropic jungles or in Arctic wastes where they must face a constant struggle for their very existence have had little time or energy for scientific or cultural progress.

Ages ago we learned to heat the air and thus make it possible to inhabit, throughout cold seasons, sections of the earth which otherwise would have been forbidding. But, temperature is only one phase in our new command of the conditions of the air which surrounds us.

We have also learned to clean the air; to free it from dust and objectionable foreign matter. We have learned to establish and control any desired condition of humidity, which is just as important to our comfort and health as the temperature of the air.

In summer, we can dehumidify conditions relieve the muggy oppression of humid days; in winter, we can add moisture to the air alleviating that parching, arid condition common to the artificially heated, but unhumidified, home or office.

In fact, it is possible now to simulate any climate and to maintain these conditions within an enclosure regardless of the season, the weather, or the geographical location. For instance, we have devised a laboratory cabinet wherein it is possible to observe the growth of plants and their parasites under the temperature, humidity, light, and air pressure conditions existing at the bottom of Death Valley or on top of Pike's Peak.

In a South American mine, 7,000 ft. below the surface of the earth, temperatures exceed 120° F., and the air is almost saturated with moisture. Air-conditioning equipment, placed immediately in the workings, has corrected this condition, brought humane comfort to workers, and allowed the work to proceed efficiently to the profit of the owners.

### Industrial Development

Manufactured weather found its inception in the demands of industry in order that the manufacturing of certain weather sensitive products might be independent of weather, seasons, or geographical locations.

While the textile industry at one time could be successful in regions having a naturally moist climate, great mills are operating today in the cotton fields near the course of supply because air conditions best suited to each manufacturing process are maintained within the mills by modern air-conditioning equipment.

Air conditioning is applied to a great variety of industrial processes and, therefore, there is necessarily a wide diversity in the character and method of its application. In some installations the primary purpose is to produce a

humid climate with only a reasonable degree of temperature reduction, which though of practical advantage is merely incidental.

While in many other cases a rigid control of temperature with a lowering of the relative humidity is required. As a result, we have two distinct types of air conditioning.

The first type, which aims at increasing humidity and is used in textile mills, tobacco factories, etc., affords merely humidification with evaporative cooling by passing the air through uncooled water sprays.

The second type, in which dehumidification as well as cooling must be ac-

### Revenue-Builder

Increased efficiency of office workers, greater comfort for restaurant patrons, theatergoers, and shoppers are factors that contribute to the decision of business men to install air-conditioning equipment in commercial establishments, Mr. Carrier shows.

As the designer of the first air-conditioned railroad car, the "Martha Washington" of the B. & O., Mr. Carrier has been intimately associated with the rapid growth in this field. "Railroads look upon air conditioning as a means of increasing the sum total of traffic by reducing the amount of diversion to other modes of travel," he explains.

accomplished, requires refrigeration to cool the spray water so that the moisture content of the air which has passed through it will be less than that of the outdoor air. The temperature of the spray water determines the moisture content.

In the first type, the cooling effect that can be obtained is limited by the wet bulb temperature of the outside air. The average wet bulb temperature of New York City during July and August is 67° F., with only 20 days where it exceeds 75° F.

The moisture content is increased in proportion to the drop in temperature produced by transforming sensible into latent heat. The air introduced from the humidifier is always saturated and at a lower temperature than that of the room. The ensuing rise in temperature determines the relative humidity. A 9° rise will produce 75% relative humidity, while a 20° rise will give 50% relative humidity.

Industries which employ this type of air conditioning usually require a uniform relative humidity. It is, therefore, obvious that the room temperature must

vary in accordance with the outdoor temperature in summer.

On the other hand, with the second type of air conditioning, which uses refrigeration, the temperature of saturation may be lowered and maintained at any point desired, which makes it possible with the latter method to control both temperature and moisture conditions independent of weather conditions.

The first type, while desirable in the manufacture of many products, is unsatisfactory as a means of cooling for human comfort on account of the high relative humidity produced.

The second type of air conditioning has a much larger field than the first as it applies to all processes that are affected by temperature as well as humidity. This is true in the manufacture of confectionery, in modern bakeries, in the manufacture of cigars and cigarettes, and in lithographing.

It is used in the automatic packaging and wrapping of goods and in the drying of certain products at low temperatures such as photographic films, chewing gum, and summer sausage. It is used most successfully in many processes of the manufacture of ceramics, from terra cotta tiles to dishes.

The Simonds Saw and Tool Co., Fitchburg, Mass., has applied it as a necessary adjunct to their windowless factory where saws are to be manufactured under artificial light and artificial ventilation, maintaining ideal conditions regardless of external conditions.

### Used in 200 Industries

More than 200 industries have up to now found air conditioning an indispensable servant freeing the progressive manufacturer from daily weather uncertainties, improving the quality of his product, and contributing to the health and efficiency of his workers.

In general, industrial applications of air conditioning are warranted whenever the tangible or direct savings will pay for the cost of the installation within three years. The economic requirement is that the cost of owning and operating, which includes interest, liberal depreciation and maintenance, shall be considerably less than the economies effected by the installation.

Frequently, economies effected by air-conditioning installations are almost startling. In the case of one ceramic manufacturer it was found possible to double his production without increasing his factory floor space as he had intended.

The cost of a relatively small air-conditioning equipment was only one fifth of the cost of the proposed increase in building. In addition, the quality of his product was improved and the reduction in losses in production more than paid for the equipment every year.

### Cost Returned in One Year

To give another instance, a large tobacco manufacturer saved in one department by the reduction of the amount of scrap tobacco enough to pay for the initial cost of the equipment six-fold in one year.

An interesting study has been made by the Philadelphia Electric Co. in one of the factories of the American Cigar Co. The object of the study was to determine the benefits derived from the addition of refrigeration equipment to the existing air-conditioning system by which the plant was enabled to maintain desired conditions of humidity and temperature in summer as well as in winter.

It was found that the investment in this addition to the installation amounted to \$34,000. The gross savings for a single season in but one of several departments which were served amounted to \$29,546 which was broken down into items as follows:

Increase in production.....\$16,392

Reduction in rejected products.....3,204

Reduction in lost time.....4,950

Reduction in labor turn-over.....5,000

Total.....\$29,546

Total fixed charges and operating costs amounted to \$6,174.50 for the year, leaving a net annual saving in this one department of \$23,371.50.

### Saves Industry \$15,000,000 Annually

In general, industrial air-conditioning installations where now in use may be conservatively expected to pay for themselves every two years. As industrial air-conditioning installations are increasing, the savings to industry are increasing in proportion.

If we may estimate the present value of industrial applications of air conditioning in this country at \$30,000,000, then under normal conditions they are probably producing economies of at least \$15,000,000 annually.

The rate of industrial applications is an accelerated one as, in my opinion, at present not more than one-fourth of the manufacturers and industries which could be benefited by air conditioning have as yet availed themselves of these possible economies.

If this is true, the possibility of the balance sheet for industrial applications of air conditioning might show annual savings aggregating \$60,000,000 instead of \$15,000,000.

In this paper we are considering air conditioning from the standpoint of economics. But, the economist will say "Wherever you are making savings in cost of production by the use of air

conditioning you are necessarily decreasing the over-all labor requirement not only in the industries themselves but considering industry as a whole including the manufacture of air-conditioning equipment and the appurtenances thereto."

It is axiomatic that if the over-all labor requirements were not reduced then there would be no purpose in applying air conditioning to industry or, in fact, in applying any other improvement.

It must be admitted that air conditioning as applied to certain branches of industry does reduce the labor requirement of industry as a whole except for one feature. Lower cost of production results in lower prices and increases the demand for a product, as in the case of rayon where air conditioning

this reason that an increase in moisture content of the air is more serious than an increase in the temperature of the air.

The controlling factor in the maximum possible rate of cooling through perspiration is the wet-bulb temperature of the surrounding air. If the wet-bulb temperature goes above 85° F., as in certain mines, effective work becomes almost impossible, while above 90° F. wet bulb the body temperature would rise rapidly resulting in death.

Fortunately in no climates on this earth do the maximum wet-bulb temperatures greatly exceed 80° F. If this were not true, the earth would not be inhabited by human beings.

Although the heat control mechanism of the body is wonderfully flexible and sensitive, and even though he can exist under extremes of cold or of heat and moisture, man can not endure such conditions without considerable discomfort and loss of efficiency.

A most thorough and interesting line of research has been carried on for the last ten years by the American Society of Heating and Ventilating Engineers at their Research Laboratory, Bureau of Mines, at Pittsburgh.

Here many facts regarding the relative effect of temperature, humidity, and air motion have been discovered and coordinated, so that today we are able to tell you what the optimum desirable conditions for an average group of persons are.

### Effective Temperatures

We are also able to tell how the heat is dissipated and the proportion of sensible to latent heat under various conditions, also how the efficiency of the human body is affected by variations in atmospheric conditions. These investigations established a scale of reference which has been termed "Effective Temperature."

It is well known that the sensation of warmth depends upon humidity and air motion fully as much as it does on temperature. By taking the temperature of still saturated air as a basis of comparison, we are able to set up a definite scale for human comfort under widely differing atmospheric conditions.

It is surprising to consider that the average adult at rest gives off as much heat as a 120-watt incandescent lamp—about 400 B.t.u. per hour—enough heat, could it be converted completely into mechanical energy, to raise the body 32 ft. a minute; while for a person performing work it would be two to three times this quantity.

### Determined by A.S.H.V.E.

The proportion of heat that is given off from the human body as sensible heat, and that which is given off as latent heat through evaporation from the skin and lungs, has also been determined accurately at the A. S. H. & V. E. Laboratory.

The amount of sensible heat given off depends upon the air temperature, while the surplus heat which cannot thus be removed is disposed of by evaporation. This is the function that the delicate mechanism of the body controls so perfectly as to give a heat balance under widely varying atmospheric conditions without any appreciable change in body temperature.

There is, however, a noticeable change in skin temperature, or skin sensation of warmth, which makes us comfortable or uncomfortable under conditions other than those that are ideal.

Prof. C. P. Yaglou at Harvard University has measured the various degrees of comfort or warmth corresponding to different effective temperatures. Not all people are equally comfortable under the same conditions.

On a large number of subjects tested he finds, for example, that in the winter time an effective temperature corresponding to 71° F. and 40% relative humidity gives the greatest feeling of comfort, while in mid-summer conditions with the customary clothing, the greatest feeling of comfort corresponds to 76° F. and 50% relative humidity, or an increase from 66° F. in winter to 71° F. effective temperature in summer.

### Correlates Factors

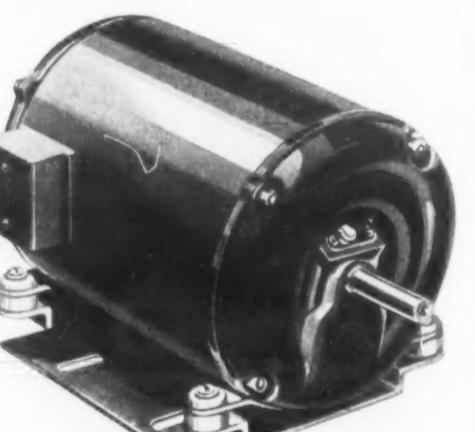
This is a fact that we did not know recently, nor until the effective temperature scale was devised did we have any means of correlating conditions of temperature, humidity, and air motion.

Some air motion is always desirable for the highest degree of comfort; but excessive air motion, which we can afford, is not only uncomfortable but dangerous. One of the greatest developments in the application of air conditioning has been in the systems and methods devised for air distribution to produce the necessary air change without causing drafts.

It has been found that air movement, or air turbulence, in excess of 50 ft. a minute is objectionable. Great strides have been made within the last few years in methods of air distribution to make air conditioning practicable.

The point that I wish to make in this connection is that the commercial success of air conditioning has been dependent upon scientific research work through national societies and industrial

## Compact!



The capacitor is built inside the motor frame

## And It's A Capacitor Motor

By engineering the capacitor inside the motor frame, Howell Electric Motors Company have overcome the greatest objections to the capacitor motor—the space and appearance factors.

This built-in fractional horse power capacitor motor is compact and neat in appearance. In addition, it is quiet in operation, light in weight, possesses an abundance of power for its rating and provides long-time, carefree service. It is the ideal motor for electric refrigerators and other home appliances.

Horizontal or vertical types are included in this new "Red Band" line. Rubber or rigid mounting is offered on the horizontal models. Write for additional information.

**HOWELL ELECTRIC MOTORS CO.**  
HOWELL, MICHIGAN

Let us turn for a few moments from generalities to the concrete facts of man's physiological requirements. The human being is a heat engine—a prime mover. The fuel of this heat engine is his food.

The energy produced within his body is brought about by the oxidation of this fuel by the air, with the result that only a portion of this energy, according to the same law of thermodynamics that governs the steam engine for example, is convertible into mechanical energy or useful work, while the greater portion must be removed from the body in the form of sensible heat, just as it is removed in your great power plants by the condenser of your turbine.

The maximum thermal efficiency obtainable in the human being as a heat engine has been actually measured and is found to be approximately 17 per cent, a very worthy performance comparable with that of the most efficient power plant.

As we all know, the human body has a very ingenious method of controlling the disposal of this large quantity of waste heat. Normally, the greater portion of heat from the body is dissipated as sensible heat by radiation to surrounding objects and conduction to the surrounding atmosphere, yet we have all of us probably lived in air temperatures that were above the body temperature.

People do not necessarily die in the American desert with temperatures frequently reaching 120° F. The reason for this is that the body can, under extreme conditions, dispose of all of its heat by evaporative cooling through perspiration, just as a cooling tower functions in a power plant.

In fact, the skin is the cooling tower of the human power plant. It is for

measures to exact results. When dual efficiency is the aim, the human after m

Continued on Page 5, Column 1

# Shows Its Industrial Economies and Human Benefits

## NEW INDUSTRIES HELP EMPLOYMENT OF MEN

(Continued from Page 4, Column 5)

possibilities, has air conditioned its new 33-story office building from top to bottom. Thirteen hundred tons of refrigeration, with a demand load of over 1500 kw. for the entire conditioning plant, are required.

Indeed, it seems quite possible that air conditioning for human comfort will realize calculable as well as intangible returns that are fully as great as those realized in manufacturing. Whether we will ever come to windowless offices, artificially lighted and completely air conditioned, I do not know, but such construction on the first 15 floors of metropolitan buildings would certainly be made practicable by air conditioning, and very probably desirable.

If we had taken the advice of the "gloomy Dean" of England and suspended our research activities, we would not today have the possibility of a wholly new industry which will require the labor of thousands which would otherwise be unemployed because of advances in other fields.

Research and development must first produce economies in labor, but then they must, and do, go further to supply new products and to develop not only new demands but demands that a few years ago were never dreamed of, of which air conditioning is a pertinent illustration.

**Economic Aspects of Comfort Cooling**

Any device which will increase man's comfort and his satisfaction with his surroundings tends to increase his efficiency. Further, if such a product actually improves the conditions affecting his health and decreases the fatigue from his day's labor, then its economic advantage is unquestionable providing it can be produced at a cost commensurate with the returns.

In other words, it must pay its way either through increased productivity or through increased comfort and health. What are the returns in air conditioning?

The first installation of air conditioning in a theater in New York City in 1924 paid for the entire installation the first summer that it was operated. It increases the summer attendance fully 50% and the average yearly attendance from 12% to 15% while the cost of air conditioning varies from 5% to 10%.

In the department store, air conditioning pays its way. The lower floor and basements where nearly one-half the sales are made are usually conditioned. The cost of owning and operating an air-conditioning system is less than one half of 1% of the total sales for the year.

Since it is the summer sales that are chiefly increased, it requires less than a 2% increase for a three months' period. Judging from the results of air conditioning at Macy's, as an illustration, the increase in purchases and presumably the increase in sales during this period is several times this amount.

### Increase Among Office Buildings

I am confident in predicting that within a few years the office building that is not air conditioned in summer as well as in winter will be wholly obsolete. Today, air conditioning is being applied to entire office buildings at an owning and operating cost of from 18 cents to 25 cents a square foot of rentable area.

Not all of this increase in cost, however, is chargeable to the air-conditioning equipment, as a certain expense for ventilation and additional heating would be required in any event. It is probably fair to say that the increased cost of owning and operating due to air conditioning would be from 14 cents to 20 cents a square foot annually.

In these days of competitive building, an average of 80% occupancy may be considered quite normal. If the addition of air conditioning will increase the occupancy 5% to 10%, it will pay for itself without any increase in the rental rates.

On the other hand, when the building is satisfactorily rented the cost of owning and operating would be met by an increase of rental of from 14 cents to 20 cents a square foot.

### Saves in Maintenance Cost

There are also other advantages to the building owner. The cost of cleaning and renovating are reduced practically to one-half due to the fact that windows can be kept closed, dust excluded, and only clean air used. Furthermore, this locations that otherwise would be undesirable become readily rentable and the practical rentability of the door space is thus increased.

A tenant would pay 10%, or even 25%, more rental, if he could spend his working hours, and receive his clients, in a climate that was ideal the year around. His increase in personal efficiency would generally pay many times over the cost of this extra rental.

It certainly must pay to provide air conditioning for human beings when it even pays to air-condition for cows, as is done at the Walker-Gordon Plant at Plainboro, N. J. The only difference between the human being and the cow is that for the cow you have a definite measure of efficiency which will show on the balance sheet, while no such exact record can be kept for the performance of the human individual.

When it can be shown that the annual efficiency of a cow is increased 7% by air conditioning and cooling during the summer months, may we not expect the same increase in the efficiency of human beings?

The Metropolitan Life Insurance Co., after making a thorough study of the

own immediate resources. As a potential field, it is still as great as ever.

The great drawback which has always existed in the exploitation of tropical wealth is that the climate is not well suited to man, especially to the northern race of men, who by reason of their superior climate have been able to advance to present heights of intellectual, social, and material progress—excepting, of course, our present, and I hope fleeting, discomfort.

If we could convey our northern climate to the tropics, then we would have an ideal combination. I feel that I am correct in stating that, if in the tropics the northern man could pass at least 50% of his time under ideal climatic environment, during the remainder of the 50% of the time he would be able to resist almost any objectionable conditions of heat and humidity.

This becomes obvious when we find men working strenuously in the excessive heat of the rolling mills day after day, and in other similar industries, without loss of energy or vitality. It is because they are able to give their organism a rest from this unnatural and trying condition.

In the tropics, as conditions exist today, this is not so. They suffer the entire 24 hours, day after day, from the languorous effect of combined heat and moisture without relief, and without the tonic of atmospheric change. Two years of such life is the limit of endurance for some.

Others annually, in India for example, spend a large part of the year in Simla in the mountains where the climate is temperate, and thus secure the needed relief. Artificial air conditioning in the office, in the club, in the home, would afford the necessary relief and maintain the vigor of the individual at a point probably equal to that experienced in our temperate climate.

He would obtain not merely comfort but health; not merely luxury but efficiency. It would solve the problem of successful and efficient living for the white man in these regions, and it would make possible the successful exploitation of the great natural resources of the tropics, thus adding greatly to the material advancement of mankind generally.

Similarly, deep mines that cannot be operated practically or profitably, owing to the heat and humidity, can be restored to their original efficiency by air conditioning and refrigeration in their depths. This is being done today in one notable gold mine, the Morro Velho mine of the St. John del Rey Co., Estat de Minas, Brazil. Through air conditioning, the unprofitable operation of today may be converted into the profitable operation of tomorrow.

### From Manufacturers' Standpoint

We have reviewed the possibilities of air conditioning with respect to the user. Let us now examine its economic possibilities as an industry from the standpoint of the manufacturer. Air conditioning equipment is really an assembly of various types of mechanism.

First, there is the air-conditioning chamber itself, using either heat-transfer surface or sprays, in which the air is either heated or cooled, humidified or dehumidified, and cleaned of dust or other impurities. In addition, there are many parts required from other manufacturers; air heaters or radiators; fans; pumps; cooling towers; and temperature and humidity control.

In addition, there usually must be fabricated on the job sheet metal ducts, either with or without insulation, for the distribution of the conditioned air; special registers and outlets for the admission of the air to the rooms; all of

which must either be fabricated or applied on the job.

Last, but important, is the engineering service required for the proper application of air conditioning to various requirements and to various types of building construction. Thus, it gives employment in many factories as well as in the field.

Every growing industry which has been carried over a number of years has a growing rate of doubling. The period for doubling in air conditioning is about every four years. The indications are that the future growth for some years may be expected to be as rapid as during the past seventeen years due to the fact that it is really an infant industry and there is a tremendous latent demand as has been already indicated.

There is even a possibility that the rate of acceleration in growth will increase. But, on the assumption that the present growth alone may be maintained for the next 20 years, we may reasonably expect an industry of over \$300,000,000 in 1952. From present indications, I believe it is apt to be greater rather than smaller.

Translated in terms of employment from the mine or factory to the consumer, it means the additional employment for over half a million people in the manufacture and installation of equipment, to say nothing of additional employment given to others in operation, maintenance, and in power production.

The value of the air-conditioning load to the power companies is indicated by the fact that the annual power consumption corresponding to the cumulative sales of equipment would be more than one sixth of the annual sales of equipment in the corresponding year, although the increase in power consumption for any year is less than 2% of the corresponding equipment sales.

# KEROTEST

## Multiple Diaphragm VALVES

for air conditioning units

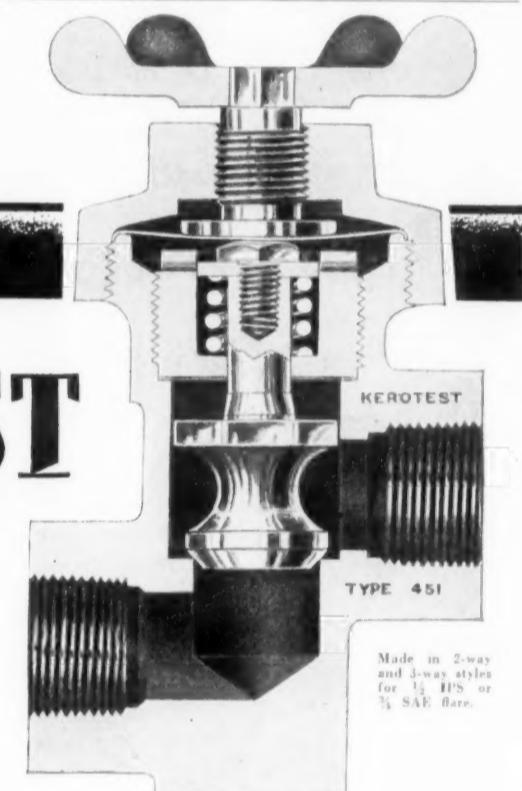
### FULL SIZE OPENINGS

Kerotest Multiple Diaphragm Packless 2-way and 3-way Valves are standard equipment on many of the new air conditioning units now being placed on the market by the leaders in the industry.

Full size openings for  $\frac{1}{2}$ " pipe or  $\frac{3}{4}$ " SAE flare . . . no soldered joints . . . triple metal diaphragm design assures absolute gas or liquid tightness under all pressures, and distinctive metal to metal backseat makes replacement possible without interruption of service or loss of refrigerant . . . all important reasons for Kerotest preference among the leading ventilating and refrigerating engineers throughout the world.

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**KEROTEST**

# REVIEW OF LATEST PATENTS GRANTED

ISSUED OCTOBER 18, 1932

(Continued from Last Issue)

1,883,450. REFRIGERATING CONTAINER. Champ S. Andrews, North Chattanooga, Tenn., assignor to Carton Development Corp., New York, N. Y., a Corporation of Delaware. Filed June 13, 1930. Serial No. 460,864. 6 Claims. (Cl. 229—14.)

1. A refrigerating container of the class described composed of inner and outer receptacles, fold in flaps at each end of said outer receptacle, said inner receptacle extending through an opening in each of said fold in flaps whereby the outer walls of said inner receptacle are maintained out of contact with the inner walls of said outer receptacle.

1,883,487. REFRIGERATING INSTALLATION. Louis I. Beckwith, Dorchester, Mass. Filed Aug. 27, 1929. Serial No. 388,763. 8 Claims. (Cl. 62—103.)

5. In a refrigerating installation, the combination of a drip pan comprising insulating material between metal sheathing, this sheathing being substantially continuous over the upper and lower surfaces of the pan and being separated along the edges thereof to avoid transfer of heat by conduction through the metal sheathing from the upper to the lower side of the pan, an upright baffle comprising insulating material between metal sheathing, this sheathing being substantially continuous over the sides of the baffle and being separated along the upper and substantially vertical edges thereof to form a substantially continuous gas along these edges for avoiding transfer of heat by conduction from one side of the baffle to the other, the metal sheathing being folded substantially upon itself along the lower edge of the baffle to form a depending lip substantially in alignment with one side of the baffle, the pan having recesses registering with and receiving these dowels, the recesses being located to support the baffle with the depending lip projecting within the pan so that drippings from the baffle may fall within the pan.

1,883,488. REFRIGERATING APPARATUS. John B. Breen, Dayton, Ohio, assignor to Frigidaire Corp., Dayton, Ohio, a Corporation of Delaware. Filed Sept. 27, 1929. Serial No. 395,587. 5 Claims. (Cl. 62—89.5.)

1. A mechanically cooled refrigerator cabinet having an upper display compartment and a lower storage compartment, and a partition wall separating said compartments, said wall having an opening provided therein, a compact, block-like cooling unit removably supported and disposed in said opening and having a portion extending above said partition wall into said display compartment and another portion extending below said partition wall into said storage compartment, said opening being larger than the cooling unit, said cooling unit being adapted for installation as a unit.

1,883,607. REFRIGERATION. James H. Denney, Evansville, Ind., assignor, by mesne assignments, to Servel, Inc., New York, N. Y., a Corporation of Delaware. Filed Oct. 25, 1926. Serial No. 144,117. 3 Claims. (Cl. 62—115.)

2. In a refrigerating apparatus the combination of a base, an elongated condenser disposed longitudinally of the base, a compressor and motor mounted in spaced relation on said base with substantially parallel shafts disposed transversely of the base and

substantially at right angles to the condenser, a fan driven from the motor, said fan being located between the motor and condenser, a fan driven by the compressor, said fan being located between the compressor and condenser, said fans being arranged to produce two currents of air moving in opposite directions through the condenser and single current of air over each the motor and the compressor.

1,883,665. AIR CONDITIONING UNIT. Walter L. Fleisher, New York, N. Y., assignor to The Cooling & Air Conditioning Corp., New York, N. Y., a Corporation of New York. Filed March 22, 1929. Serial No. 349,143. 6 Claims. (Cl. 261—91.)

1. An air conditioning unit having an inlet and an outlet, means for drawing air through the inlet and discharging it through the outlet, an atomizer, a bracing member within said unit, a truss formed by eliminators on opposite sides of said member, said bracing member supporting a motor for driving the atomizer.

1,883,668. REFRIGERATOR. Charles N. Foreman, Chambersburg, Pa. Filed Oct. 23, 1931. Serial No. 570,709. 2 Claims. (Cl. 62—91.5.)

1. In refrigerator construction of the class described, an enclosure embodying a refrigerating and storage compartment, insulation packing in said enclosure surrounding said compartment, a refrigerant container imbedded in said insulation and isolated from said compartment, and heat absorbing and conducting means connected with said container and projecting into said compartment, said refrigerant container being designed to accommodate frozen carbon dioxide blocks, and including a weighted follower plate arranged in the container above the blocks and adapted to recede as the blocks evaporate.

1,883,759. REFRIGERATOR UNIT. Arthur E. Brown, Burlington, Ontario, Canada. Filed Sept. 18, 1929. Serial No. 393,437. 6 Claims. (Cl. 62—99.)

1. A refrigerating unit, comprising a casting, a coil of tubing encircling said casting, a coil of tubing spaced from and encircling the former coil, said first-mentioned coil being embedded in a solid filler of predetermined heat exchange value disposed mainly on the outward side thereof whereby a greater heat exchange will be effected between the embedded coil and the interior of the casting than between the embedded coil and the exterior of the casting.

1,883,778. AIR CLEANSING AND COOLING DEVICE. Claude W. Freeman, Fort Worth, Tex. Filed Oct. 4, 1930. Serial No. 486,436. 6 Claims. (Cl. 261—104.)

1. An air cleansing and cooling device, comprising a cabinet having an inlet opening in one wall and an outlet opening in an opposite wall, a fan disposed before one of said openings, a motor for operating said fan, a chamber enclosing the fan and covering the adjacent opening and further having an inlet through the lower part thereof, a plurality of absorbent bodies suspended to hang vertically in the cabinet between the inlet and the outlet openings, a liquid receiving receptacle in the bottom of the cabinet, and means for removing the liquid from the receptacle and discharging it over the absorbent elements.

1,883,833. SHELF DEVICE FOR REFRIGERATOR CABINETS. George J. Tilton, Modesto, Calif. Filed Sept. 4, 1931. Serial No. 561,261. 5 Claims. (Cl. 312—172.)

3. A shelf device comprising, in combination, an upright frame; a plurality of sheet metal shelves secured in the frame; said shelves having outwardly and upwardly flared flanges; and cutting teeth formed on the flanges at the upper edges thereof.

## REISSUES

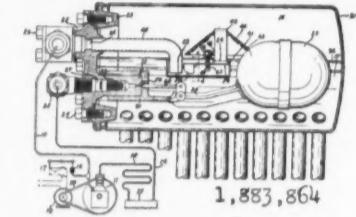
18,633. EXPANSION CHAMBER FOR REFRIGERATING MECHANISMS. Glenn Muffy, Scarsdale, N. Y., assignor to Copeland Products, Inc., a Corporation of Michigan. Original No. 1,817,202, dated Aug. 4, 1931. Serial No. 206,438, filed July 18, 1927. Application for reissue filed June 6, 1932. Serial No. 615,738. 13 Claims. (Cl. 62—126.)

10. The method of making a refrigerant

expansion element which comprises welding together the edges of two sheets of metal to form the ends of a chamber for the expansion of refrigerant liquid, welding said sheets together at intervals intermediate such edges for reinforcing said sheets against the pressure of said refrigerant employed, bending intermediate portions of said sheets to bring the remaining edges thereof together to provide an enclosure suitable for the reception of ice trays internally thereof and for cooling the interior of a refrigerator exteriorly thereof, and welding together the meeting edges of said sheet to complete the continuous formation of said element.

ISSUED OCTOBER 25, 1932

1,883,864. REFRIGERATING APPARATUS. Marshall W. Baker, Dayton, Ohio, assignor to Frigidaire Corp., Dayton, Ohio, a Corporation of Delaware. Filed Oct. 31, 1928. Serial No. 403,760. 17 Claims. (Cl. 62—8.)



1,883,864

17. A refrigerating system employing a refrigerant and a lubricant in which the lubricant and refrigerant separate by gravity, of an evaporator; means for supplying liquid refrigerant to and for withdrawing gaseous refrigerant from the evaporator, a portion of the lubricant being delivered from the means to the evaporator with the refrigerant; a single path of flow for conducting gaseous refrigerant and lubricant from the evaporator to said first named means, a trap in said single path of flow from the evaporator, and a valve in said single path of flow actuated in response to pressure in the evaporator for delivering excess lubricant from the evaporator to said trap.

1,883,901. REFRIGERATING APPARATUS. Mortimer W. Fish and Harry F. Clark, Dayton, Ohio, assignors to Frigidaire Corp., Dayton, Ohio, a Corporation of Delaware. Filed Jan. 29, 1930. Serial No. 424,333. 2 Claims. (Cl. 200—124.)

1. A circuit breaking device comprising a contact, a movable member, a second contact carried by said movable member, means for locking said movable member in position so that said second contact engages said first contact, means for moving said member in locking position, thermally actuated means for releasing said locking means upon excessive flow of current through said contacts, one of said contacts comprising a spring means for snapping open said contacts upon the release of said locking means, said moving means also comprising means for manually releasing said locking means substantially as described.

1,883,899. REFRIGERATING SYSTEM. Benjamin R. Harris, Chicago, Ill. Filed Sept. 11, 1929. Serial No. 391,712. 8 Claims. (Cl. 62—1.)

1. The method of introducing an odorous substance into a refrigerating system, which comprises placing the substance in relatively high concentration in the path of the refrigerant, and allowing the refrigerant to pass in contact with such substances to pick up such substance in sufficient amounts to render the circulating fluid odoriferous, whereby leakage of such fluid will be readily detected.

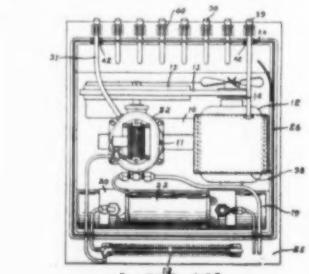
1,883,919. MECHANICAL REFRIGERATOR. Harry B. Hull, Dayton, Ohio, assignor, by mesne assignments, to Frigidaire Corp., a Corporation of Delaware. Filed Nov. 12, 1926. Serial No. 147,862. 12 Claims. (Cl. 62—116.)

1. In combination, a cabinet, one wall of which being open for the ingress and egress of air, a refrigerator condenser, disposed within the cabinet adjacent said open wall, and means within the cabinet for moving the entering air in a horizontal stream about a portion of said condenser and in one direction and for moving the outgoing air in a horizontal stream about another portion of said condenser in the opposite direction, said streams lying in substantially the same horizontal plane.

1,883,920. REFRIGERATING APPARATUS. Harry B. Hull, Dayton, Ohio, assignor, by mesne assignments, to Frigidaire Corp., a Corporation of Delaware. Filed April 13, 1927. Serial No. 183,480. 34 Claims. (Cl. 62—116.)

1. A household cabinet, comprising in combination with a cabinet having a door opening in one side thereof and an opening in the top wall; of a removable cover for said latter opening; a cooling unit within the cabinet; and a partition wall separating said cabinet into a food compartment and a compartment containing said unit, said wall being spaced from the cooling unit and providing for the flow of air about the cooling unit for cooling the air passing through said compartment, said partition wall being removable bodily from said latter opening.

1,883,921. HEAT DISSIPATING DEVICE FOR REFRIGERATING APPARATUS.



1,883,921

Harry B. Hull, Dayton, Ohio, assignor to Frigidaire Corp., Dayton, Ohio, a Corporation of Delaware. Filed Oct. 31, 1928. Serial

No. 316,253. Renewed June 4, 1932. 8 Claims. (Cl. 62—116.)

1. Refrigerating apparatus comprising in combination a compressor, means for driving the compressor, a housing completely inclosing the compressor and driving means, and heat conducting members extending through the housing for transmitting to the outside atmosphere heat generated within the housing, and means for circulating the air confined within the housing over said heat conducting members.

1,883,922. REFRIGERATING APPARATUS. Harry B. Hull, Dayton, Ohio, assignor to Frigidaire Corp., Dayton, Ohio, a Corporation of Delaware. Filed Oct. 31, 1928. Serial No. 316,254. 8 Claims. (Cl. 62—115.)

1. Refrigerating apparatus comprising in combination a compressor, means for driving the compressor, a housing completely inclosing the compressor and driving means, said housing including at least one passage in heat exchange relation with the outside atmosphere and means for circulating the air confined in the housing through said passage and over the compressor and driving means.

1,883,923. REFRIGERATING APPARATUS. Harry B. Hull, Dayton, Ohio, assignor to Frigidaire Corp., Dayton, Ohio, a Corporation of Delaware. Filed Oct. 31, 1928. Serial No. 316,253. Renewed June 4, 1932. 8 Claims. (Cl. 62—116.)

1. Refrigerating apparatus comprising a compressor, means for driving the compressor, a housing completely inclosing the compressor and driving means, a condenser outside the housing connected to the compressor, and heat exchange means associated with the housing for conducting through the housing and dissipating in the outside atmosphere heat generated in the housing, said housing being removable without disturbing the connections between the compressor and condenser.

1,883,924. REFRIGERATING APPARATUS. Harry B. Hull, Dayton, Ohio, assignor to Frigidaire Corp., Dayton, Ohio, a Corporation of Delaware. Filed May 30, 1930. Serial No. 457,579. 16 Claims. (Cl. 62—8.)

1. In a refrigerating system, an evaporator adapted to contain a gaseous refrigerant, a liquid refrigerant, and a layer of lubricating fluid, a float member for regulating the level of the liquid refrigerant, a duct for removing the gaseous refrigerant, and means communicating with said duct for removing lubricating fluid from said evaporator, said means including a portion separate from and attached to move simultaneously with said float member.

1,883,937. REFRIGERATIVE APPARATUS. David H. Killeffer, Yonkers, N. Y., assignor to Dryice Equipment Corp., New York, N. Y., a Corporation of Delaware. Filed March 2, 1929. Serial No. 343,859. 4 Claims. (Cl. 62—91.5.)

1. A refrigerative container comprising a casing of material substantially impermeable to carbon dioxide gas, formed to permit escape of gas only by outflow from a high level, a second container arranged within the casing and located at a high level holding solid carbon dioxide evolving gas to fill said casing, said second container being substantially impermeable to carbon dioxide gas so that gas evolved from the solid carbon dioxide can escape only by overflow, and penetrable cellular insulating material protecting the inner surfaces of said casing below the high overflow level and disposed so that it must be penetrated by said gas before the gas can reach said casing.

1,883,938. PACKAGE AND CONTAINER. David H. Killeffer, Yonkers, N. Y., assignor to Dryice Equipment Corp., New York, N. Y., a Corporation of Delaware. Filed Sept. 24, 1929. Serial No. 394,814. 10 Claims. (Cl. 229—49.)

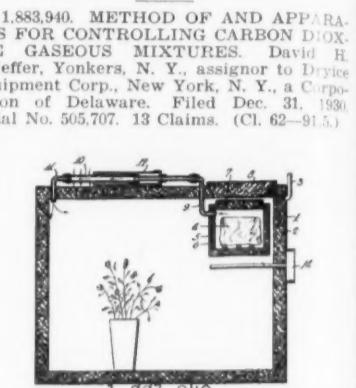
1. A sealing strip for the seams of a refrigerating container, with solid carbon dioxide used as the refrigerant, said container being comprised of walls of corrugated paper made gasproof, a restricted vent for the release of the carbon dioxide gas generated by the solid carbon dioxide, said sealing strips comprising strips of paper fabric or the like and a layer of rubber latex.

1,883,939. REFRIGERATING APPARATUS AND METHOD. David H. Killeffer, Yonkers, N. Y., assignor to Dryice Equipment Corp., New York, N. Y., a Corporation of Delaware. Filed Dec. 23, 1930. Serial No. 504,248. 14 Claims. (Cl. 62—91.5.)

1. A method of controlling distribution of refrigerating effects of solid carbon dioxide.

ide, which includes highly insulating solid carbon dioxide from direct heat absorption from the refrigerated space; and conducting all of the gas from said solid into heat exchange relation with the refrigerated space and discharging all of it outside of said space; and applying heat to said solid carbon dioxide through a metallic conductor which is located outside of said refrigerated space.

1,883,940. METHOD OF AND APPARATUS FOR CONTROLLING CARBON DIOXIDE GASEOUS MIXTURES. David H. Killeffer, Yonkers, N. Y., assignor to Dryice Equipment Corp., New York, N. Y., a Corporation of Delaware. Filed Dec. 31, 1930. Serial No. 505,707. 13 Claims. (Cl. 62—91.5.)



1,883,940

11. A refrigerator having means for cooling it by evaporation of carbon dioxide and discharge of the resulting gas into the atmosphere of the refrigerator, and in combination therewith, adjustable means for diluting the gas in said atmosphere.

1,883,941. METHOD OF AND APPARATUS FOR STANDARDIZING CARBON DIOXIDE GASSEOUS MIXTURES. David H. Killeffer, Yonkers, N. Y., assignor to Dryice Equipment Corp., New York, N. Y., a Corporation of Delaware. Filed Dec. 31, 1930. Serial No. 505,708. 10 Claims. (Cl. 62—91.5.)

1. A method of refrigerating and controlling the composition of an enclosed atmosphere of carbon dioxide gas mixed with air by means of solid carbon dioxide, which includes causing the composition and resulting density of the mixture to vary from the standard in the direction of over-dilution; utilizing the over-diluted atmosphere to control inflow of carbon dioxide gas by exposing in said atmosphere a surface of thin rubber septum, causing the solvent activity of said material to vary in accordance with a predetermined standard by maintaining a fixed quantity of standard carbon dioxide gas-air mixture in solvent relation to the other surface of said septum, thereby causing the carbon dioxide gas to be transferred through the solvent septum in one direction or the other according to the exterior or interior percentage of the carbon dioxide gas is the greater, thereby producing correlative changes of amount and pressure of said standardized gas mixture and utilizing such pressure changes to cause supply of carbon dioxide gas to the atmosphere of the container to correct the over-dilution.

1,883,944. REFRIGERATING APPARATUS. Jesse G. King, Dayton, Ohio, assignor to Frigidaire Corp., Dayton, Ohio, a Corporation of Delaware. Filed Oct. 31, 1929. Serial No. 403,736. 8 Claims. (Cl. 62—8.)

1. An evaporator adapted to contain liquid refrigerant, a valve regulating the admission of said liquid refrigerant to said evaporator, a non-sinkable float in said evaporator for controlling said valve, means forming a part of said float for collecting liquid floating on said liquid refrigerant, and means associated with said last mentioned means for providing egress of said floating liquid from said evaporator.

1,883,945. REFRIGERATING APPARATUS. Jesse G. King, Dayton, Ohio, assignor to Frigidaire Corp., Dayton, Ohio, a Corporation of Delaware. Original application filed March 27, 1924, Serial No. 702,456. Divided and this application filed Jan. 11, 1930. Serial No. 420,742. 6 Claims. (Cl. 217—7.)

1. A commercial refrigerator cabinet comprising a frame structure including top and bottom and upright metal members joined to form a rigid structure; top, bottom and side walls of insulating material secured in the corresponding sides of said frame structure and supported thereby; an inner tank member secured at its top to said top insulating wall, said tank member being pivotable.

1,883,946. REFRIGERATING APPARATUS. Jesse G. King, Dayton, Ohio, assignor to Frigidaire Corp., Dayton, Ohio, a Corporation of Delaware. Filed Dec. 23, 1930. Serial No. 504,248. 14 Claims. (Cl. 62—91.5.)

1. A method of controlling distribution of refrigerating effects of solid carbon dioxide.

(Continued on Page 7, Column 1)

## Designing

a new model

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MILLER

# IN FIELD OF ELECTRIC REFRIGERATION

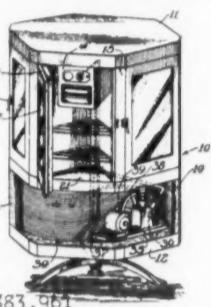
(Continued from Page 6, Column 5)

vided with a plurality of open top sleeves for the reception of food containers, said top insulating wall being provided with a plurality of opening registering with the openings in said sleeves and closure members for the openings in the top wall.

1,884,357. MAGNETICALLY OPERATED VALVE. Lawrence E. Koch and Harris C. Roth, Elkhart, Ind., assignors, by mesne assignments, to Minneapolis-Honeywell Regulator Co., Minneapolis, Minn., a Corporation of Delaware. Filed Oct. 17, 1927. Serial No. 226,701. 1 Claim. (Cl. 137—139.)

In a magnetically controlled valve, a main body portion having a chamber and an inlet and an outlet formed therein in communication one with the other, valve mechanism for controlling the passageway therethrough, an armature for controlling the operation of said valve mechanism, a solenoid, a plurality of iron plugs in said body portion in engagement with the core portion of said solenoid for actuating said armature, said body portion being apertured between said plugs to provide a high magnetic reluctance therebetween, and sealing means for said apertured portion comprising a channel-shaped member secured to said body portion by said plugs, said solenoid being secured to said channel-shaped member.

1,883,961. PORTABLE REFRIGERATOR. Joseph Kosmerl, Lyons, Ill. Filed Nov. 16, 1931. Serial No. 375,249. (Cl. 62—116.)



1,883,961

1. A refrigerator comprising a casing having a plurality of hinged doors; a base; means whereby said casing is rotatably mounted on said base; a refrigerating unit in said casing; a cooling unit in said casing comprising means for circulating an evaporating refrigerant, and a compressor for compressing the refrigerant vapor and for circulating the same.

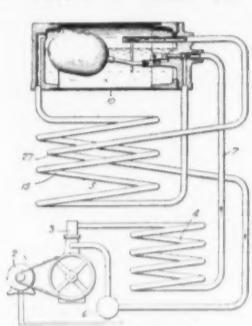
1,884,081. ICE PLANT. George W. Miller, Washington, D. C. Filed Aug. 19, 1931. Serial No. 558,111. 4 Claims. (Cl. 62—160.)

1,884,126. REFRIGERATING APPARATUS. Charles B. Myers, Dayton, Ohio, assignor to Frigidaire Corp., Dayton, Ohio, a Corporation of Delaware. Filed April 30, 1928. Serial No. 273,957. 7 Claims. (Cl. 62—98.)

1. Refrigerating apparatus including in combination a casing for enclosing an ice-making container, a hollow shelf within the

casing for supporting a container, said hollow shelf having its rear end open, a single continuous conduit for circulating refrigerant including a portion formed into a planar serpentine freezing coil extending from said hollow shelf from the rear and a portion formed into a cooling coil surrounding the opposite end of said jacket.

1,884,186. REFRIGERATION. Frank Desnoyers Peltier and Clyde Edward Ploeger, Evansville, Ind., assignors, by mesne assignments, to Servel, Inc., New York, N. Y., a Corporation of Delaware. Filed Dec. 6, 1926. Serial No. 152,902. 10 Claims. (Cl. 62—115.)



1,884,186

1. Refrigerating apparatus comprising, in combination, a chamber, a float in said chamber and means cooperating with said float to define a liquid space and a vapor space in said chamber, a discharge connection in the vapor space of said chamber, said connection having a restricted portion and a communication between said restricted portion and the liquid space of said chamber.

1,884,187. REFRIGERATION. Frank Desnoyers Peltier and Clyde Edward Ploeger, Evansville, Ind., assignors, by mesne assignments, to Servel, Inc., New York, N. Y., a Corporation of Delaware. Filed June 6, 1928. Serial No. 290,871. 5 Claims. (Cl. 62—115.)

1. Refrigerating apparatus comprising, in combination, a first evaporator conduit means to supply liquid refrigerant to said first evaporator conduit, a manifold connected to said first evaporator conduit to receive liquid and vapor therefrom, means to regulate the supply of liquid refrigerant to said first evaporator conduit to define a liquid space and a vapor space in said manifold, a second evaporator conduit connected to receive vapor from said manifold, means interposed in the path of flow of vapor from said manifold to said second evaporator conduit for producing a drop in pressure and a connection between said liquid space and said means.

1,884,202. REFRIGERATION APPARATUS. Harry A. Phillips, Evanston, Ill. Filed Nov. 12, 1929. Serial No. 406,563. 8 Claims. (Cl. 62—126.)

1. Means for controlling the admission of liquid refrigerant to a refrigeration unit comprising a float chamber, a float within said float chamber, a liquid refrigerant chamber surrounding said float chamber for protecting the liquid refrigerant in said float chamber against heat absorption and a valve controlled by said float for admitting liquid refrigerant to said refrigerant chamber at a point outside of and remote from said float chamber.

1,884,203. METHOD OF AND MACHINE FOR MAKING SPIRAL FIN TUBING. George H. Pickhardt, Detroit, Mich., assignor to McCord Radiator & Mfg. Co., Detroit, Mich., a Corporation of Maine. Filed April 2, 1928. Serial No. 266,488. 15 Claims. (Cl. 29—33.)

1. In a machine for making spiral fin tubing comprising in combination, means for supporting a tube, means for presenting a flat sheet metal fin strip edgewise to the tube, and rotary means for reducing the thickness of the strip along its outer edge portion as the strip is presented to the tube to compensate for the larger circumference around the outer edge of the strip as it is spirally wound on the tube, said last named means while shaping the strip also forcing it about the tube.

12. In a machine for making spiral fin tubing comprising in combination means for presenting a flat sheet metal fin strip edgewise to a tube to wind the fin strip spirally thereon as the tube is rotated and fed endwise through the machine, and means for rotating a tube and feeding it through the machine comprising a rotary drum to receive the tube, a single set of rolls carried by the drum and engaging the tube for rotating the tube in the turning of the drum, a stationary sun gear at one end of the drum and having a bore for the passage of the tube therethrough, planet gears in mesh with said sun gear and carried about the same in the rotation of the drum, and means connecting the rolls with said planet gears for turning the rolls to feed the tube through the drum in the rotation of the latter.

1,884,303. REFRIGERATING APPARATUS. Harry H. Sheets, Dayton, Ohio, assignor to Frigidaire Corp., Dayton, Ohio, a Corporation of Delaware. Filed Sept. 27, 1929. Serial No. 395,568. 10 Claims. (Cl. 62—126.)

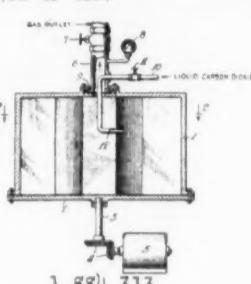
10. An evaporator adapted to contain a quantity of liquid refrigerant and oil, said evaporator having an outlet for gaseous refrigerant, means within the evaporator for removing oil from the liquid refrigerant and collecting same out of contact therewith, conduit means connecting said first named means with said outlet, said first named means having a portion thereof in intimate heat exchange relation with the medium to be cooled by the evaporator.

1,884,312. REFRIGERATING APPARATUS. Harry Sloan, Fox Point, Wis., assignor to The Vilter Mfg. Co., Milwaukee, Wis., a Corporation of Wisconsin. Filed July 30, 1931. Serial No. 553,978. 3 Claims. (Cl. 62—115.)

1. A purger comprising an elongated horizontal inner casing, an outer tubular casing surrounding said inner casing to form a jacket embracing said inner casing intermediate the ends of the latter, said outer casing having an opening at one end for admitting mixed gases to the lower portion of one end of said jacket, means for ad-

mitting refrigerant to an end of said inner casing beyond the adjacent end of said outer casing to cool said jacket and thereby condense some of the admitted gases, and means for effecting removal of the non-condensed gases from an upper portion of the opposite end of said jacket.

1,884,313. CENTRIFUGAL METHOD AND APPARATUS FOR MAKING SOLID CARBON DIOXIDE. John D. Small, Douglaston, N. Y., assignor to Dryice Corp. of America, New York, N. Y., a Corporation of Delaware. Filed Dec. 19, 1929. Serial No. 415,146. 13 Claims. (Cl. 62—121.)



1,884,313

1. A method of compacting solid carbon dioxide, which includes forming a mixture of crystal and liquid carbon dioxide while maintaining pressure at or above the triple point; subjecting the wet mixture to centrifugal force; and drying the mixture.

1,884,317. REFRIGERATING APPARATUS. Harry F. Smith, Dayton, Ohio, assignor to Frigidaire Corp., Dayton, Ohio, a Corporation of Delaware. Filed Sept. 30, 1929. Serial No. 396,229. 20 Claims. (Cl. 62—8.)

1. A refrigerating system containing a quantity of refrigerant and lubricant, circulating means for the refrigerant, revolving means actuated by the flow of refrigerant in a portion of the system for causing circulation of lubricant therein.

1,884,352. REFRIGERATING SYSTEM. Archie Hugh Strong, Norristown, Pa., assignor to Master Domestic Refrigerating Co., Inc., Conshohocken, Pa., a Corporation of New York. Filed June 6, 1929. Serial No. 368,791. 4 Claims. (Cl. 62—118.)

1. In a refrigerating system of the absorption type; the combination with a main refrigerating apparatus inclosing a primary refrigerant and including a generator, a condenser and an evaporator, connected in a closed conduit circuit, means adapted to intermittently heat said generator, and thermostatic means adapted to automatically control heating means in accordance with the temperature of said primary refrigerant; means adapted to intermittently cool said generator, including a secondary closed conduit circuit with a liquid trap, and a cellular radiator including air passageways and separate adjoining passageways containing a secondary refrigerant, capable of boiling at a lower temperature than said primary refrigerant; said secondary conduit circuit extending in and out of said generator; means adapted to induce air flow through said radiator, including a stack open to the atmosphere; a valve in said secondary circuit, between said trap and said generator; whereby, when said valve is closed, the secondary refrigerant, in a liquid state, may be excluded from the portion of its circuit extending in said generator; and means operatively connecting said heater and valve, whereby they are rendered alternately operative by said thermostatic means.

1,884,353. REFRIGERATING SYSTEM. Archie Hugh Strong, Norristown, Pa., assignor to Master Domestic Refrigerating Co., Inc., Conshohocken, Pa., a Corporation of New York. Filed Aug. 8, 1930. Serial No. 473,922. 15 Claims. (Cl. 62—5.)

1. In a machine for making spiral fin tubing comprising in combination, means for supporting a tube, means for presenting a flat sheet metal fin strip edgewise to the tube, and rotary means for reducing the thickness of the strip along its outer edge portion as the strip is presented to the tube to compensate for the larger circumference around the outer edge of the strip as it is spirally wound on the tube, said last named means while shaping the strip also forcing it about the tube.

1,884,355. REFRIGERATING SYSTEM. Archie Hugh Strong, Norristown, Pa., assignor to Master Domestic Refrigerating Co., Inc., Conshohocken, Pa., a Corporation of New York. Filed Aug. 8, 1930. Serial No. 473,922. 15 Claims. (Cl. 62—5.)

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1,884,356. REFRIGERATING SYSTEM. Archie Hugh Strong, Norristown, Pa., assignor to Master Domestic Refrigerating Co., Inc., Conshohocken, Pa., a Corporation of New York. Filed Aug. 8, 1930. Serial No. 473,922. 15 Claims. (Cl. 62—5.)

1. In a machine for making spiral fin tubing comprising in combination, means for supporting a tube, means for presenting a flat sheet metal fin strip edgewise to the tube, and rotary means for reducing the thickness of the strip along its outer edge portion as the strip is presented to the tube to compensate for the larger circumference around the outer edge of the strip as it is spirally wound on the tube, said last named means while shaping the strip also forcing it about the tube.

1,884,357. REFRIGERATING APPARATUS. Harry F. Smith, Dayton, Ohio, assignor to Frigidaire Corp., Dayton, Ohio, a Corporation of Delaware. Filed Sept. 30, 1929. Serial No. 396,229. 20 Claims. (Cl. 62—8.)

1. A method of compacting solid carbon dioxide, which includes forming a mixture of crystal and liquid carbon dioxide while maintaining pressure at or above the triple point; subjecting the wet mixture to centrifugal force; and drying the mixture.

1,884,408. COMBINED HEATING AND COOLING SYSTEM FOR RAILWAY CARS. John Van Vulpun and Edward A. Russell, Chicago, Ill., assignors to Vapor Car Heating Co., Inc., Chicago, Ill., a Corporation of New York. Filed Jan. 12, 1931. Serial No. 508,155. 14 Claims. (Cl. 257—7.)

parts in said casing, a cylinder in said casing having a lubricant inlet therein and pump means operating within said cylinder to force lubricant to said moving parts and a spring cradle supporting said cylinder.

1,884,409. FOOD FREEZING. Douglas K. Warner, Watkins Glen, N. Y. Filed April 4, 1931. Serial No. 527,723. 4 Claims. (Cl. 62—1.)

4. A method of freezing food by surface evaporation which consists in wetting the surface of the food with an aqueous fluid and evaporating the fluid while the food is exposed to a relatively high vacuum.

1,884,410. REFRIGERATING APPARATUS. Joseph William Winter, Penfield, Pa., assignor to Master Domestic Refrigerating Co., Inc., Conshohocken, Pa., a Corporation of New York. Filed Nov. 13, 1928. Serial No. 319,051. 2 Claims. (Cl. 62—5.)

1. In refrigerating apparatus, the combination with a generator wherein the refrigerant is periodically subjected to the action of heat from a gas burner, and to the action of a cooling medium; of conduits for fuel gas and for such cooling medium, disposed in parallel spaced relation; valves in the respective conduits spaced apart longitudinally with respect to said conduits, and having respective stems in parallel, spaced relation;

1. In a temperature controlling and ventilating system for railway cars, a heating means positioned in the lower portion of the car, a refrigerating means, an air circulating means, and a duct leading from said air circulating means and having outlets adjacent the floor of the car for discharging air beneath the heating means to be heated thereby, there being branch passages leading from this duct and having outlets in the upper portion of the car for delivering thereinto air cooled by the refrigerating means, and closures for the several outlets so that the lower outlets may be closed when the upper outlets are open and vice versa.

1,884,411. REFRIGERATING APPARATUS. Harry A. Phillips, Evanston, Ill. Filed Nov. 9, 1927. Serial No. 232,083. 4 Claims. (Cl. 62—172.)

1. A method of quick freezing a solution of lesser concentration than that of its cryohydrate to produce a frozen mass of crystals of substantially uniform density throughout consisting of supplying a shallow container with a body of the solution, and then absorbing the heat from such body while the latter is in a still condition within the container, into a refrigerator in contact with the container to cause in connection with the refrigerator the freezing of said body rapidly without the presence of convection currents or other motions whereby said body is frozen without noticeable

1,884,428. METHOD OF MAKING FROZEN BRINE. Douglas K. Warner, Bristol, Conn. Filed Nov. 9, 1927. Serial No. 232,083. 4 Claims. (Cl. 62—172.)

1. An air conditioning device consisting of an elongated upright casing having laterally directed openings at the top and bottom of said casing, means in the upper part of the casing for directing a spray of liquid downwardly, said means being adapted to be connected to a source of water under pressure, a fan in the casing for drawing air therethrough, and means below the lower opening for collecting and leading off the water falling from said spray.

(Continued in Next Issue)

1,884,434. PORTABLE AIR-CONDITIONING DEVICE. Harry D. Betz, Kansas City, Mo. Filed Oct. 13, 1927. Serial No. 225,972. 4 Claims. (Cl. 62—129.)

1. An air conditioning device consisting of an elongated upright casing having laterally directed openings at the top and bottom of said casing, means in the upper part of the casing for directing a spray of liquid downwardly, said means being adapted to be connected to a source of water under pressure, a fan in the casing for drawing air therethrough, and means below the lower opening for collecting and leading off the water falling from said spray.

1,884,435. REFRIGERATING SYSTEM. Archie Hugh Strong, Norristown, Pa., assignor to Master Domestic Refrigerating Co., Inc., Conshohocken, Pa., a Corporation of New York. Filed Aug. 8, 1930. Serial No. 473,922. 15 Claims. (Cl. 62—5.)

1. In a refrigerating system, the combination with a main refrigerant circuit including a generator and a condenser; of an auxiliary refrigerant circuit including a coil in cooperative relation with said generator, and a condenser; an air flue inclosing said two condensers; and a single fan at one end of said flue whereby both of said condensers are cooled by operation of said fan and the air moved by said fan first encounters said main condenser and thereafter encounters said auxiliary condenser.

1,884,436. REFRIGERATOR. Otto Strufe, Dwight, Ill. Filed Sept. 7, 1929. Serial No. 390,909. 7 Claims. (Cl. 62—69.)

1. A part of a refrigerating system, having a low pressure portion and a high pressure portion, a pump for circulating refrigerant from said low pressure portion to said high pressure portion, a valve in said high pressure portion normally closed when the pump is idle, and a dash-pot for preventing closing of said valve while the pump is in operation.

1,884,437. REFRIGERATING APPARATUS. Otto M. Summers, Dayton, Ohio, assignor to Frigidaire Corp., Dayton, Ohio, a Corporation of Delaware. Filed March 30, 1929. Serial No. 351,345. 11 Claims. (Cl. 230—1.)

1. A part of a refrigerating system, having a low pressure portion and a high pressure portion, a pump for circulating refrigerant from said low pressure portion to said high pressure portion, a valve in said high pressure portion normally closed when the pump is idle, and a dash-pot for preventing closing of said valve while the pump is in operation.

1,884,438. REFRIGERATING APPARATUS. Otto M. Summers, Dayton, Ohio, assignor to Frigidaire Corp., Dayton, Ohio, a Corporation of Delaware. Filed March 30, 1929. Serial No. 351,345. 11 Claims. (Cl. 230—1.)

1. A part of a refrigerating system, having a low pressure portion and a high pressure portion, a pump for circulating refrigerant from said low pressure portion to said high pressure portion, a valve in said high pressure portion normally closed when the pump is idle, and a dash-pot for preventing closing of said valve while the pump is in operation.

1,884,439. REFRIGERATING APPARATUS. Otto M. Summers, Dayton, Ohio, assignor to Frigidaire Corp., Dayton, Ohio, a Corporation of Delaware. Filed March 30, 1929. Serial No. 351,345. 11 Claims. (Cl. 230—1.)

1. A part of a refrigerating system, having a low pressure portion and a high pressure portion, a pump for circulating refrigerant from said low pressure portion to said high pressure portion, a valve in said high pressure portion normally closed when the pump is idle, and a dash-pot for preventing closing of said valve while the pump is in operation.

1,884,440. REFRIGERATING APPARATUS. Otto M. Summers, Dayton, Ohio, assignor to Frigidaire Corp., Dayton, Ohio, a Corporation of Delaware. Filed March 30, 1929. Serial No. 351,345. 11 Claims. (Cl. 230—1.)

1. A part of a refrigerating system, having a low pressure portion and a high pressure portion, a pump for circulating refrigerant from said low pressure portion to said high pressure portion, a valve in said high pressure portion normally closed when the pump is idle, and a dash-pot for preventing closing of said valve while the pump is in operation.

1,884,441.